REMEDIAL SITE ASSESSMENT DECISION - EPA NEW ENGLAND

Site Name: Edmunds Manufacturing Company **EPA ID#:** CTD054187455

Alias Site Names: _____

Address: 45 Spring Lane **City:** Farmington **State:** CT

Refer to Report Dated: 07-11--97 **Report type:** SIP

Report developed by: RFW /CoE

DECISION:

| | **1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**

| | 1a. Site does not qualify for further remedial site assessment under CERCLA (No Further Remedial Action Planned - NFRAP)

| | 1b. Site may qualify for further action, but is deferred to: | | RCRA | | NRC

|X| **2. Further Assessment Needed Under CERCLA:** 2a. (optional) Priority: |X | Higher | | Lower

2b. Activity Type: | | PA | | ESI | | SI | | HRS evaluation

|X| Other: Further evaluation needed

DISCUSSION/RATIONALE:

There is a potential release to the surface water and potential contamination of surface water targets.

There has been a release to groundwater and contamination of groundwater targets.

Report Reviewed and Approved by:

Don Smith Signature: Don Smith Date: July 11, 1997

Site Decision Made by:

Don Smith Signature: Don Smith Date: July 11, 1997

EPA Form # 9100-3

FINAL SITE INSPECTION PRIORITIZATION REPORT
FOR
EDMUNDS MANUFACTURING COMPANY
FARMINGTON, CONNECTICUT

CERCLIS No. CTD054187455
TDD No. 9409-02-CWX
Delivery Order No. 0002

Prepared by:

Roy F. Weston, Inc.
67 Batterymarch Street
Boston, Massachusetts 02110

July 11, 1997

ROY F. WESTON, INC.
Reviewed and Approved:

Tom Gary 7/11/97
Task Manager Date

Robert F. Morhl 7/11/97
Delivery Order Manager Date
(or designee)

Alexander Easterly 11 July 97
QA Review Date

Work Order No. 10971-002-002-0007

DISCLAIMER

This report was prepared solely for the use and benefit of the U.S. Environmental Protection Agency Region I (EPA Region I) Office of Site Remediation and Restoration for the specific purposes set forth in the contract between the U.S. Army Corps of Engineers New England Division and Roy F. Weston, Inc. (WESTON®). Professional services performed and reports generated by WESTON have been prepared for EPA Region I purposes as described in the contract. The information, statements, and conclusions contained in the report were prepared in accordance with the statement of work, and contract terms and conditions. The report may be subject to differing interpretations or misinterpretation by third parties who did not participate in the planning, research or consultation processes. Any use of this document or the information contained herein by persons or entities other than the EPA Region I shall be at the sole risk and liability of said person or entity. WESTON therefore expressly disclaims any liability to persons other than the EPA Region I who may use or rely upon this report in any way or for any purpose.

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Farmington, Connecticut

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INTRODUCTION

Roy F. Weston, Inc. (WESTON®) was requested by the U.S. Environmental Protection Agency Region I (EPA Region I) Office of Site Remediation and Restoration to perform a Site Inspection Prioritization (SIP) of the Edmunds Manufacturing Company (Edmunds) property in Farmington, Connecticut. Tasks were conducted in accordance with the SIP scope of work and technical specifications provided by the EPA Region I. A Screening Site Inspection (SSI) Report for the Edmunds property was prepared by the NUS Field Investigation Team (NUS/FIT) on July 2, 1990. NUS/FIT documented the past disposal of untreated rinse water from bright dipping, nickel plating, and black oxide finishing processes to an on-site drywell. On the basis of the information provided in the SSI Report, the Edmunds SIP was initiated.

EPA Region I has also requested WESTON to perform SIP investigations on 15 facilities, including Edmunds, which are located within and adjacent to the Farmington Industrial Park (FIP) in Farmington and Plainville, Connecticut. For the purposes of this report, these 15 facilities will be referred to as the FIP area.

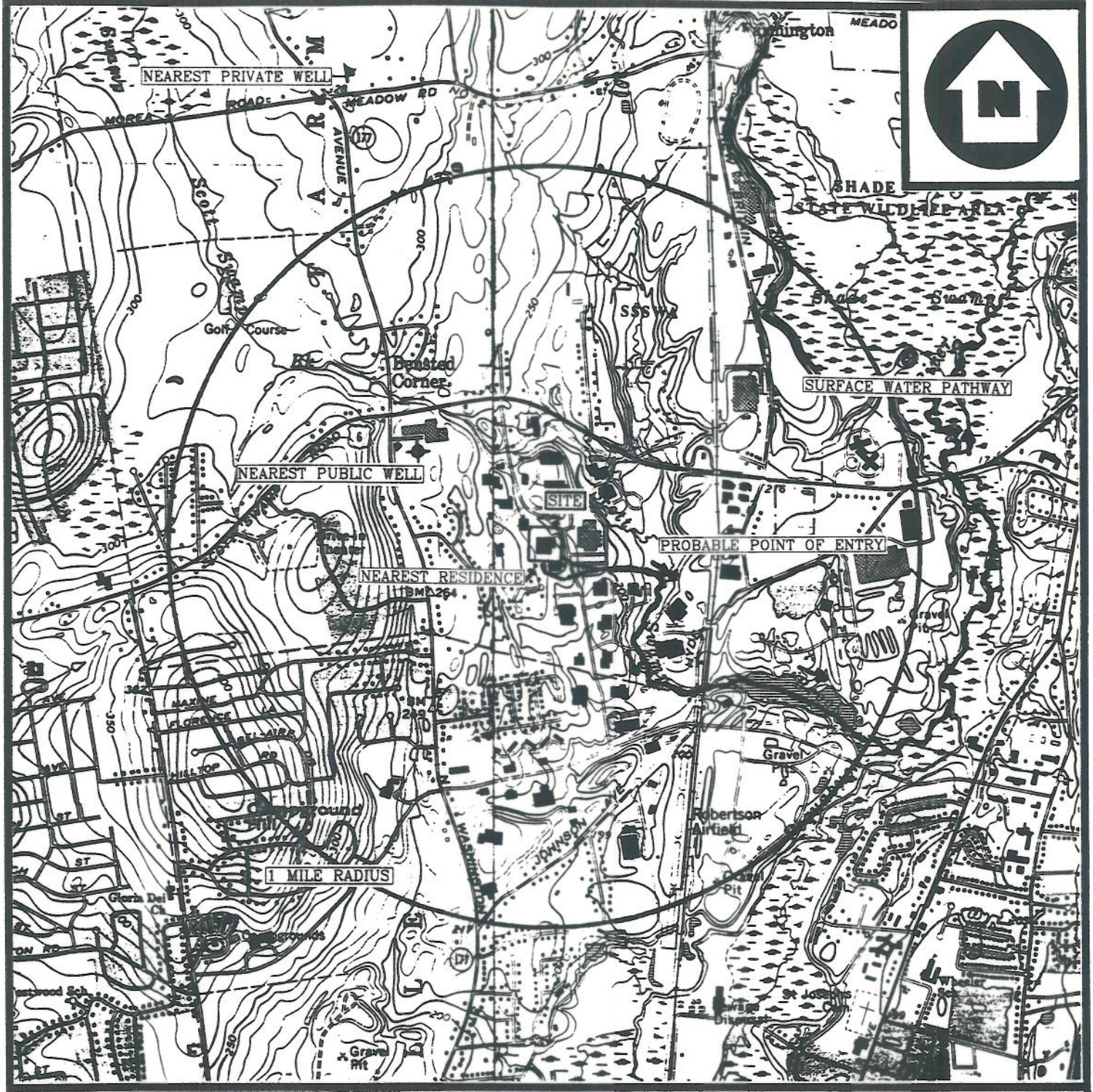
Background information used in the generation of this report was obtained through file searches conducted at EPA Region I, Connecticut Department of Environmental Protection (CT DEP), telephone interviews with town officials, conversations with persons knowledgeable of the Edmunds property and conversations with other Federal, State, and local agencies. Additional information was gathered during the WESTON on-site reconnaissance on April 13, 1995 and WESTON environmental sampling on July 12, 1995.

This package follows the guidelines developed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, commonly referred to as Superfund. These documents do not necessarily fulfill the requirements of other EPA regulations such as those under the Resource Conservation and Recovery Act (RCRA) or other Federal, State, or local regulations. SIPs are intended to provide a preliminary screening of sites to facilitate EPA's assignment of site priorities. They are limited efforts and are not intended to supersede more detailed investigations.

SITE DESCRIPTION

The Edmunds property is located at 45 Spring Lane, Farmington, Hartford County, Connecticut at geographic coordinates 41° 42′ 05.7″ north latitude and 72° 52′ 19.9″ west longitude [2; 3, pp.1-4] (Figure 1A). According to Farmington Town Assessor's maps 76 and 77, Edmunds is located at Lot No. 23 Map 77.

Note: Text which appears in italics indicates original portions of the Screening Site Inspection Report which were either copied or paraphrased.



BASE MAP IS A PORTION OF THE FOLLOWING 7.5' U.S.G.S. QUADRANGLE(S):
NEW BRITAIN, CT, 1966, PHOTOREVISED 1992; BRISTOL, CT, 1966, PHOTOREVISED 1984

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

QUADRANGLE LOCATION: NEW BRITAIN, CONNECTICUT

LOCATION MAP

EDMUNDS MANUFACTURING COMPANY

FARMINGTON, CONNECTICUT

WESTON MANAGERS DESIGNERS/CONSULTANTS

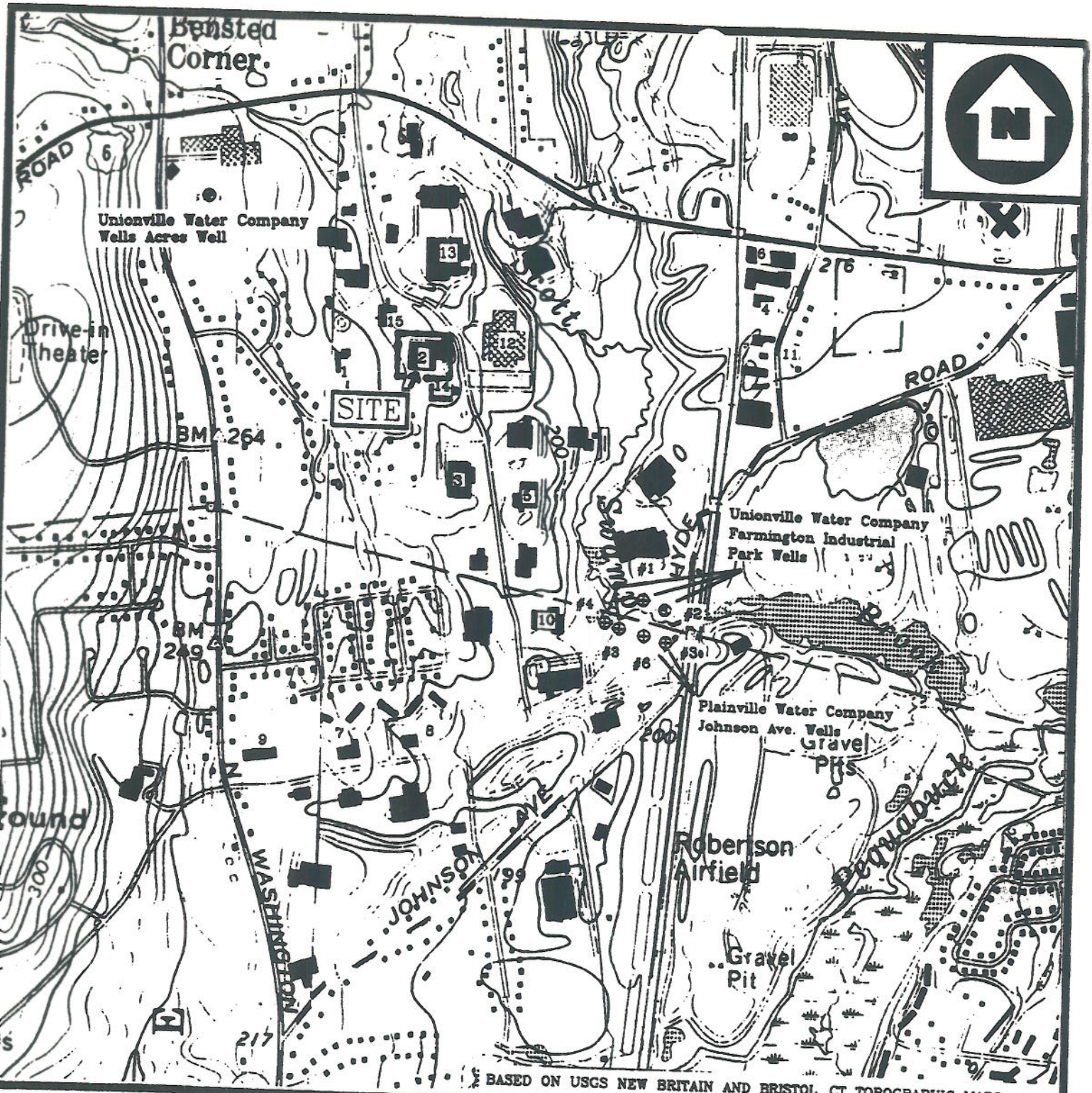
FIGURE 1A

The property has been occupied by Edmunds since 1965 and is currently owned by Mr. Robert Edmunds. Edmunds is an active manufacturing company currently manufacturing gauges for commercial and industrial uses [1, p. 2; 3, p. 2]. The Edmunds property is approximately four acres and consists of a single one-story 43,800-square foot manufacturing building [1, p. 3; 9, p. 2-1]. The surrounding area is zoned for both mixed industrial and residential use. The property is abutted to the north by Mallory Industries (CERCLIS No. CTD001148568), to the east by Connecticut Spring and Stamping Company (CERCLIS No. CTD001143007), to the west by Dell Manufacturing Company (CERCLIS No. CTD001139336), and to the south by New England Aircraft Plant No. 2 (CERCLIS No. CTD983870601) and residential properties (Figure 1B) [1, p. 2; 3, p. 2; 9, pp. 2-1 to 2-3; 12].

The property can be accessed from the northeast using Spring Lane. There are no fences or gates surrounding the property. Paved parking areas are located northeast and west of the manufacturing building; an active loading dock is located at the southwest corner of the building (Figure 2). The eastern, southern, and western perimeters of the property are wooded; the remainder of the property is covered by maintained lawns. The property slopes gradually from the northwest to the southeast. Overland flow, including roof drainage, from the Edmunds property travels south to a drainage swale, which begins at 55 Spring Lane, and is directed to the southeast. Additional overland flow is collected at a storm drain located in the northeast corner of the property and is directed through a culvert to a drainage swale located southeast of the property on the opposite side of Spring Lane (Figure 2) [3, pp. 1-4]. Both drainage channels converge approximately 300 feet southeast of the property, and then discharge to Scott Swamp Brook.

Based on observations made by WESTON during the April 13, 1995 on-site reconnaissance, a drum storage area, measuring approximately 100 square feet (sq ft), is located within a fenced area along the west side of the building (Figure 2). Several 55-gallon drums, which included; waste and virgin oils, metal chips, one 55-gallon drum of methyl ethyl ketone (MEK), three 30-gallon paint drums, were observed during the WESTON on-site reconnaissance. An electrical transformer, placed on a concrete pad within a surrounding fence, is located at the west side of the building; no other fenced areas are located on-site. Soil staining, measuring approximately 5 sq ft, was observed in the immediate vicinity of the transformer; no other soil staining was observed on the property during the WESTON on-site reconnaissance [3, p. 10].

No known underground storage tanks (USTs) are currently located on the property. However, based on available file information and discussions with facility representatives, a 3,000-gallon waste oil UST was formerly located on the southwest side of the manufacturing building. A 4,000-gallon chromium rinse fiberglass UST was formerly located on the northwest side of the manufacturing building. In addition, a former subsurface disposal system, consisting of two underground concrete septic tanks and associated leaching system (two drywells) was also located west of the manufacturing building [1, p. 3; 9, pp. 3-1 to 3-9]. No known monitoring wells are currently located on the property. The nearest residence to the property is located on Lot No. 56, approximately 300 feet south of the property, at 37 Wells Drive (Figure 2) [4]. The nearest public drinking water well is located 0.2 miles northwest of the Edmunds property [4]. This well is known as the Wells Acre Well and is operated by the Unionville Water Company (UWC) [22; 30]. The nearest private drinking water well is located approximately 1.2 miles northwest of the Edmunds property and serves approximately three people [63, pp. 9-10].



LEGEND

1 - Dell Manufacturing Co.
2 - Edmunds Manufaturing Co.
3 - Fletcher-Terry Company
4 - Gros-ite Ind., Inc.
5 - Kip, Inc.
6 - Whitnon-Spindle
7 - American Tool and Manufacturing
8 - Brown Manufaturing
9 - ESCO Laboratories
10 - Mott Metallurgical Co.
11 - Roy Machinery and Sales
12 - Connecticut Spring & Stamping
13 - New England Aircraft Plant No. 1
14 - New England Aircraft Plant No. 2
15 - Mallory Industries

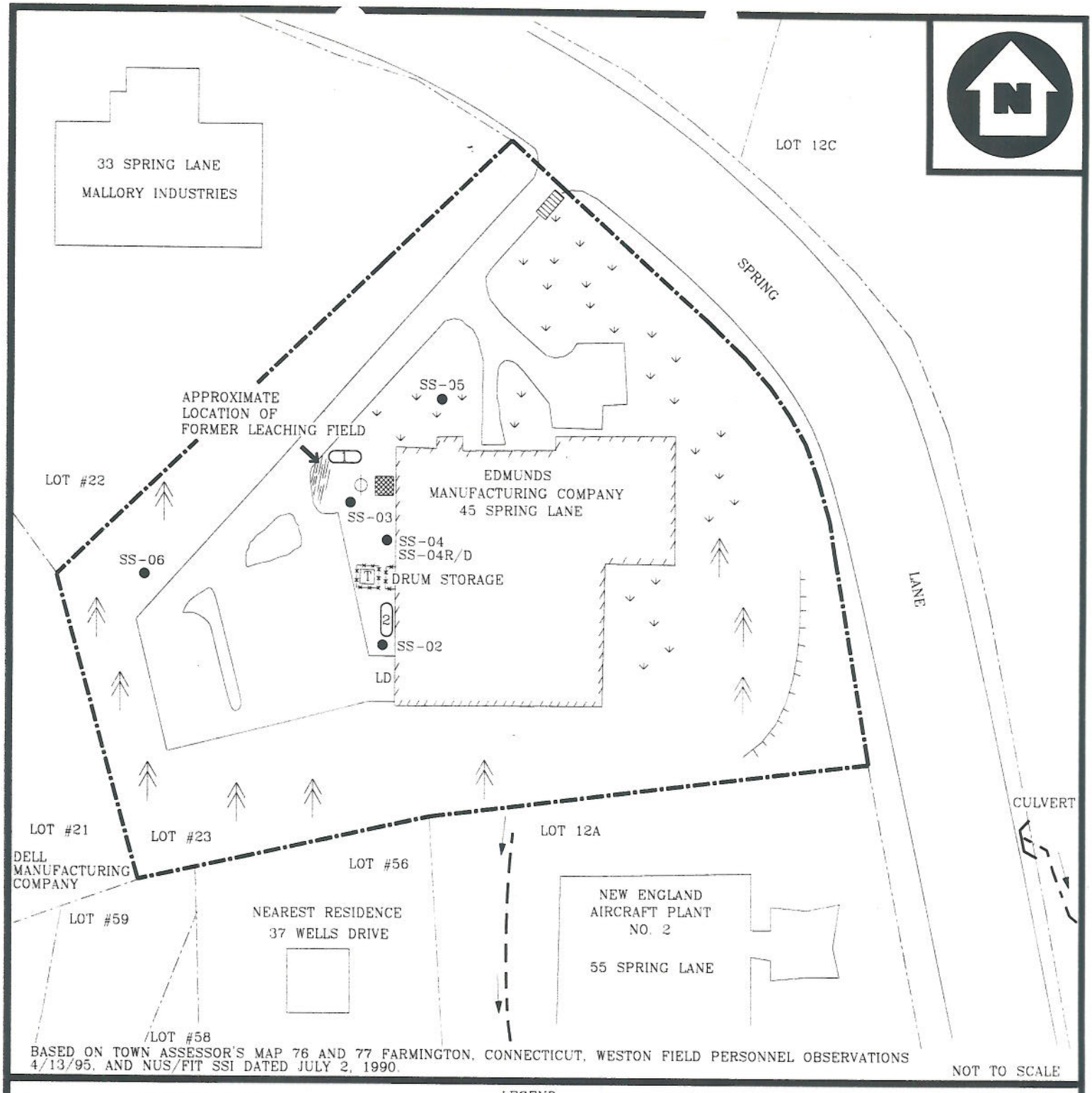
NOT TO SCALE

AREA MAP

FARMINGTON INDUSTRIAL PARK PROPERTIES
FARMINGTON/PLAINVILLE, CONNECTICUT

WESTON MANAGERS ENGINEERS/CONSULTANTS

FIGURE 1B



SITE SKETCH

EDMUNDS MANUFACTURING COMPANY
FARMINGTON, CONNECTICUT

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 2

OPERATIONAL AND REGULATORY HISTORY AND WASTE CHARACTERISTICS

Prior to development in 1965, the Edmunds property and surrounding properties were used for agricultural purposes. Edmunds has been owned and operated by Mr. Edmunds at this location since 1965 [1, pp. 2-3; 3, p. 2]. Edmunds has been and is currently a manufacturer of commercial and industrial gauges. Processes used at the manufacturing building include but are not limited to; general metal machining (drilling, turning, grinding, lapping, milling, and lathe work), plating, painting, and parts degreasing [1, pp. 2-3]. Processes at Edmunds have remained relatively unchanged; however, chemicals used and wastes generated at the property may have varied throughout Edmunds operational history due to industry technological advances.

From 1965 until 1980, Edmunds discharged untreated rinse water from bright dipping, nickel plating, and black oxide finishing processes to on-site drywells. Non-contact coolant waters from the vapor degreasers, air conditioner, and air compressor were discharged to a man-made surface drainage system which emptied into Scott Swamp Brook. No sampling of the rinse water is documented.

A 1970 CT DEP inspection reported that the grinding and lapping process generated soluble oil waste and that plating process generated acid waste. The inspector reported that the black oxide and detergent wastes were being discharged to a septic tank and leachfield. There is no record of samples collected by the CT DEP in 1970 on the Edmunds property.

In 1974, the CT DEP updated the previous inspection and reported that unspecified wastes were, at that time, removed by Patrick's Waste Oil of Hartford, Connecticut. CT DEP records indicated that Patrick's Waste Oil was included on the CT DEP's list of approved hazardous waste haulers [1, p. 2]. The 1974 CT DEP report stated that prior to April 1974, sanitary waste was discharged to a septic tank and leachfield on the west side of the Edmunds property. In April 1974, Edmunds was connected to the municipal sanitary sewer system [1, p. 2].

A 1980 CT DEP inspection report stated that water soluble cutting oils from machining processes at Edmunds were being picked up by Patrick's Waste Oil; however, untreated rinse waste from the bright dipping, nickel plating, and black oxide finishing processes were being discharged to the on-site drywells. Acid wastes were reportedly removed by Environmental Waste Removal, Inc. Non-contact coolant waters from the degreasers, air compressor, and air conditioning were discharged to a drainage swale, which discharged to the Scott Swamp Brook. Trichloroethylene (TCE) was reportedly used as a degreasing solvent and wastes containing TCE were removed from the Edmunds property by Hubbard Hall, Inc., a CT DEP approved hazardous waste hauler [1, p. 2; 10].

In 1980, the CT DEP ordered Edmunds to eliminate the untreated wastewater discharge to the on-site drywells and groundwater. In response to the CT DEP order, Edmunds installed a 4,000-gallon fiberglass UST for chromium plating rinse wastewater and hired a permitted waste hauler to periodically empty the tank [1, pp. 1-2; 10]. According to CT DEP Hazardous Waste Management files, the drywells located at the Edmunds property were excavated during the summer of 1980 [1, p. 2; 9, pp. 3-1 to 3-9]. In September 1980, Edmunds was permitted to discharge black oxide finishing rinses to the municipal sanitary sewer system and discharge non-contact coolant water to the Scott Swamp Brook under the National Pollution Discharge

Elimination System (NPDES) Permit No. CT0023535 [1, pp. 2-3]. Nickel plating operations were reportedly eliminated at the Edmunds manufacturing building in 1980. [1, p. 2; 10]

In 1985, a CT DEP RCRA inspector reported that Edmunds was operating as a non-notifying generator and was observed using a false EPA identification number. On March 4, 1985, Edmunds notified EPA as a large quantity generator (EPA ID No. CT0054187455).

In 1987, CT DEP records stated that Edmunds reportedly generated 14,175-gallons of chromium rinse wastewater and 165-gallons of TCE and oil waste [1, p. 3]. Wastes were removed off-site by Hubbard Hall, Inc. [1, p. 3].

In December 1988, NUS/FIT completed a Preliminary Assessment (PA) of the Edmunds property which reported that disposal practices prior to 1980 were of concern and recommended that an SSI be conducted [8, p. 2]. At the time of the PA, Edmunds was contracting with CECOS, a permitted waste hauler, for waste disposal [1, p. 2].

On February 6, 1989, a CT DEP Water Compliance Unit inspection report noted that analytical results of Edmunds discharge to the municipal sewer system identified TCE and 1,1,1-TCE (sic). The CT DEP detection of 1,1,1-TCE (sic) refers to 1,1,1-trichloroethane (1,1,1-TCA). *The CT DEP inspection report also stated that drummed chemicals such as naphtha, oils, paint thinner, mineral spirits, and kerosene were being stored outside on the ground.*

In July 1990, NUS/FIT completed an SSI of the Edmunds property [1, p. 1]. During the NUS/FIT on-site reconnaissance, NUS/FIT noted that water-soluble oil waste was being stored in a 3,000-gallon UST prior to removal from the property, and waste TCE was drummed for reclamation by the supplier [1, p. 2]. NUS/FIT also observed an area of stained soils adjacent to a corroded section of the west wall of the building. Following the on-site reconnaissance, NUS/FIT personnel collected seven soil samples from the Edmunds property to characterize on-site sources and to evaluate the possibility of releases to the environment from the sources. Samples were analyzed for volatile organic compounds (VOCs). No VOCs were detected in any of the samples collected by NUS/FIT. Inorganic elements were detected in five soil samples collected from the property [1, pp. 2-7]. The results of the SSI sampling are summarized in the Waste/Source Sampling Section of this report. During the SSI, Edmunds retained Leggette, Brasheears & Graham, Inc. (LBG), an environmental consulting firm who was present during the SSI sampling event [9, pp. 2-1 to 2-2]. In September 1990, based on the NUS/FIT SSI sampling analytical data, LBG recommended that Edmunds remove the drywells, the waste oil tank, and, if necessary, excavate and dispose of contaminated soils associated with the two source areas [9, pp. 2-4].

In October 1990, Edmunds retained Loureiro Engineers Associates, P.C. (LEA) to remove the on-site septic tank, the 4,000-gallon chromium rinse water UST, and the 3,000-gallon waste oil UST, as well as sample the soils surrounding these structures and remove associated contaminated soils. With the exception of MEK, which was detected in soils at concentrations between 71 and 100 parts per billion (ppb), no other VOCs were detected in LEA soil samples during removal activities [9, pp. 2-1 to 2-2, 3-1 to 3-9].

On April 13, 1995, WESTON conducted an on-site reconnaissance at the Edmunds property. Records of hazardous waste generation and shipping for 1994 and part of 1995 were reviewed by WESTON. Hazardous waste generation records indicate on-site manufacturing processes have generated the following hazardous wastes: naphtha, waste oils, chromium (solid), lead/chromium (solid), cadmium/lead/chromium (solid), caustic alkaline (liquid), and waste paint. During the above mentioned period, waste naphtha was generated at a rate of approximately 60 gallons per year (gpy); waste oil was generated at a rate of approximately 1,265 gpy; waste cadmium/lead/chromium (solid) was generated at a rate of approximately 145 gpy; waste caustic alkaline (liquid) was generated at a rate of approximately 220 gpy; and waste paint was generated at approximately 70 gpy [3, pp. 4-5; 5; 6]. According to hazardous waste shipping manifests, hazardous wastes generated during the manufacturing processes at Edmunds are currently transported off-site for disposal by Laidlaw Environmental Services (North East), Inc. [3, pp. 4-5; 5; 6].

On July 12, 1995, WESTON collected environmental samples of groundwater, sediment, and surface water at locations upgradient and downgradient of the Edmunds property. The results of this sampling event are summarized in the Groundwater and Surface Water Pathway Sections of this report.

Table 1 presents the structures or areas identified on the Edmunds property which are documented or potential sources of contamination, the containment factors associated with each source, and the relative location of each source [1, pp. 2-3; 3, pp. 1-7; 9, pp. 3-1 to 3-9].

Table 1

Source Evaluation for Edmunds Manufacturing Company

Source Area	Containment Factors	Spatial Location
Waste Oil UST (3,000-gallon)	No groundwater monitoring system in place; was formerly buried beneath more than 2 feet of soil; therefore, contained with regard to potential surficial soil and air releases.	Southwest exterior corner of the manufacturing building.
Chromium Rinse Waste UST (4,000-gallon)	No groundwater monitoring system in place; was formerly buried beneath more than 2 feet of soil; therefore, contained with regard to potential surficial soil and air releases.	Northwest exterior corner of the manufacturing building.
Drum Storage Area	None.	Outside western side of the manufacturing building.
Two Underground Concrete Septic Tanks	Designed to release wastewater to groundwater without treatment; was formerly buried beneath more than 2 feet of soil; therefore, contained with regard to potential surficial soil and air releases.	West of the manufacturing building.

Table 1

Source Evaluation for Edmunds Manufacturing Company (Concluded)

Source Area	Containment Factors	Spatial Location
Two Drywells	Designed to release wastewater to groundwater without treatment; was formerly buried beneath more than 2 feet of soil; therefore, contained with regard to potential surficial soil and air releases.	West of the manufacturing building.
Contaminated Soil	None; available to all pathways.	Based on soil sampling results from NUS/FIT and CT DEP.
Transformer	Placed on a concrete pad in a fenced-in area.	Based on observations made during the WESTON on-site reconnaissance. An area of approximately 5 sq ft of staining was observed in the vicinity of the transformer.

Table 2 summarizes the types of potentially hazardous substances which were disposed, used, or stored on the Edmunds property [1; 3, pp. 1-7; 5; 6].

Table 2

Hazardous Waste Quantity for Edmunds Manufacturing Company

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
TCE (wastewater)	1965 to 1987: unknown 1987: 165 gpy 1987 to present: unknown	1965 to 1987: unknown 1987 1987 to present: unknown	Unknown; reportedly disposed off-site by permitted hazardous waste transporters.	Drum storage area
Plating Wastes (metals)	1965 to 1980: (volume unknown)	1965 to 1980	1965 to 1980	Drywell
Chromium Rinse Water	1965 to 1987: unknown 1987: 14,175 gpy 1987 to present: unknown	1965 to present	1965 to 1980 1980 to 1990 1990 to present	Drywell/ 4,000-gallon UST off-site disposal
Paint Waste	1992 to 1995: 70 gpy	Unknown	Disposed off-site by permitted hazardous waste transporters.	Drum storage area

Table 2

Hazardous Waste Quantity for Edmunds Manufacturing Company (Concluded)

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
Waste Oils	1965 to 1990: unknown 1990 to 1994: unknown 1994 to 1995: 1,265 gpy	Unknown	Unknown Disposed off-site by permitted hazardous waste transporters.	Waste oil 3,000-gallon UST
Solid Metal Waste (chromium, lead, cadmium)	1965 to 1994: unknown 1994 to 1995: 145 gpy	1965 to present	Unknown Disposed off-site by permitted hazardous waste transporters.	Drum storage area
Naphtha	1965 to 1994: unknown 1994 to 1995: 60 gpy	Unknown	Unknown Disposed off-site by permitted hazardous waste transporters.	Drum storage area
Caustic Alkaline Liquid Waste	1965 to 1994: unknown 1994 to 1995: 220 gpy	Unknown	Unknown Disposed off-site by permitted hazardous waste transporters.	Drum storage area

As of July 1995, 21 CERCLA properties were located in Farmington, Connecticut and 17 CERCLA properties were located in Plainville, Connecticut. Of these properties, 26 were noted to be located within one mile of the FIP [12]. As of July 1995, 31 RCRA notifiers were located in Farmington, Connecticut and 47 RCRA notifiers were located in Plainville, Connecticut. Of these notifiers, 23 were noted to be located within one mile of the FIP [13]. Table 3 presents a summary of properties located in the FIP which are the subject of current CERCLA SIP investigations being conducted by WESTON (Figure 1B). Table 3 also provides a description of the types of potentially hazardous substances which have been disposed, used, or stored on these properties.

Table 3

Summary of Substances and Source Areas Associated with Properties Located in the Farmington Industrial Park

Property & CERCLIS No.	Type of Operation	Associated Substances	Years of Use and Storage	Years of Disposal	Source Areas
Dell Manufacturing Co. CTD001139336	Dell manufactures jet engine parts.	1,1,1-Trichloroethane (1,1,1-TCA) Acid etching wastewater Paint waste Waste oils Waste cooling water Wastewater	1967 to March 1995 1967 to 1981 1967 to present 1967 to present 1991 to present 1967 to unknown	Unknown 1967 to 1981 Off-site disposal Off-site disposal Unknown Unknown	UST; drum storage area Drywell Drum storage area 4,000-gallon UST Drywell Septic system
Edmunds Manufacturing Co. CTD054187455	Edmunds manufactures gauges for commercial and industrial uses.	Trichloroethylene (TCE) 1,1,1-TCA Untreated process rinse wastewaters Waste oil Plating wastes	1965 to unknown 1965 to unknown 1965 to 1980 1965 to unknown 1965 to 1980	1965 to unknown 1965 to unknown 1965 to 1980 1965 to unknown 1965 to 1980	Drywell; leach field Drywell; leach field 4,000-gallon UST 3,000-gallon UST UST
Fletcher-Terry Co. CTD001145309	Fletcher manufactures glass cutting tools.	Nitrating salts Waste rinse water Waste cutting oils Grinding sludge 1,1,1-TCA	1969 to unknown 1969 to unknown 1969 to unknown 1969 to unknown 1969 to unknown	1969 to 1975 1969 to 1975 1969 to 1982 1969 to unknown 1969 to 1980	Septic system Septic system Drywell Unknown Drywell
Gros-ite Industries, Inc. CTD982543670	Gros-ite manufactures aircraft parts, machines, machine prototypes, and environmental chambers.	Waste oils Tetrachloroethylene (PCE)	1954 to 1991 1954 to 1976	1954 to 1991 1954 to 1976	3,000 and 1,000-gallon UST Leach field to ground
KIP, Inc. CTD064844426	The KIP property was initially developed by the Sureline in November of 1969. From 1969 to 1974, Sureline produced experimental and reconditioned machinery. KIP has been manufacturing solenoid valves at this location since 1983.	TCE Cutting oils and sludge	Unknown 1969 to 1988 Unknown	Unknown 1969 to 1988 Unknown	Unknown 500-gallon UST; concrete UST; drywell 500-gallon UST; concrete UST; drywell

Table 3

Summary of Substances and Source Areas Associated with Properties Located in the Farmington Industrial Park (Continued)

Property & CERCLIS No.	Type of Operation	Associated Substances	Years of Use and Storage	Years of Disposal	Source Areas
ESCO Laboratories, Inc. CTD001139310	ESCO, also known as Perma-Type Rubber Company manufactures rubber surgical equipment and surgical cement.	Acetone	1969 to unknown	1969 to unknown	Rear of original building
		Chlorobutane	1969 to unknown	1969 to unknown	Rear of original building
		Ethyl alcohol	1969 to unknown	1969 to unknown	Rear of original building
		Methyl cyclohexane	1969 to unknown	1969 to unknown	Rear of original building
		Methyl iso-butyl ketone	1969 to unknown	1969 to unknown	Rear of original building
		Toluene	1969 to unknown	1969 to unknown	Rear of original building
		Methane	1969 to unknown	1969 to unknown	Rear of original building
		Butane	1969 to unknown	1969 to unknown	Rear of original building
		Propane	1969 to unknown	1969 to unknown	Rear of original building
		Hexane	1969 to unknown	1969 to unknown	Rear of original building
		TCE	1969 to unknown	1969 to unknown	Rear of original building
		1,1,1-TCA	Unknown to 1985	Unknown to 1985	Sanitary sewer
		Phthalate	Unknown	Unknown	Unknown
		Total Petroleum Hydrocarbon (TPH)	Unknown	Unknown	Unknown
Brown Manufacturing CTD001149038	Brown manufactures screw machine products.	1,1,1-TCA	1967 to 1983 1983 to 1987	1967 to 1983 Off-site disposal	Drywell Drum storage area
		Mineral Spirits	1967 to 1983 1983 to 1988 1988 to present	1967 to 1983 Off-site disposal Recycled on-site	Drywell Drum storage area Recycling still
		PCE	1967 to 1983 1983 to 1988 1988 to present	1967 to 1983 Off-site disposal Recycled on-site	Drywell Drum storage area Recycling still
		Cutting Oil	1977 to unknown Unknown to present	Off-site disposal Recycled on-site	2,000-gallon UST Oil extractor centrifuge

Table 3

Summary of Substances and Source Areas Associated with Properties Located in the Farmington Industrial Park (Continued)

Property & CERCLIS No.	Type of Operation	Associated Substances	Years of Use and Storage	Years of Disposal	Source Areas
Whitnon-Spindle CTD052538105	Whitnon manufactures ballbearing and oil hydrostatic spindles.	Industrial waste stream (containing 1,1,1-TCA)	1955 to 1979 1979 to 1986 1979 to 1991	1955 to 1979 Off-site disposal Off-site disposal	Surface soil, drywell 1,000-gallon UST 2,000-gallon UST
		Water soluble coolant waste	1991 to present	Off-site disposal	2,000-gallon UST
		Scrap metal soaked with cutting oil	Unknown to present	Off-site disposal	30-yard open roll-off container
		Waste machine oil	1955 to 1979 1979 to present 1994 to present	Unknown Off-site disposal Off-site disposal	Unknown Drum storage area 1,000-gallon UST
American Tool & Manufacturing Corporation CTD001148949	American Tool performs general metal machining.	Trichloroethylene TPH	1968 to 1980 Unknown	1968 to 1980 Unknown	Oil/water separator tank Septic system
Connecticut Spring and Stamping Corporation CTD001143007	CSSC manufactures coil and torsion springs and wire forms.	Acidic wastewater Tumbling wastewater Heat quenching wastewater Tetrachloroethylene Trichloroethylene Waste oil Waste oil	1961 to 1974 1961 to 1974 1961 to 1974 1961 to present 1961 to unknown 1961 to 1972 1961 to present	1961 to 1974 1961 to 1974 1961 to 1974 Unknown 1961 to unknown Unknown Unknown	SE septic tank and leach field SE septic tank and leach field SE septic tank and leach field UST east of building UST east of building UST inside building UST northwest of building

Table 3

Summary of Substances and Source Areas Associated with Properties Located in the Farmington Industrial Park (Continued)

Property & CERCLIS No.	Type of Operation	Associated Substances	Years of Use and Storage	Years of Disposal	Source Areas
Mallory Industries, Inc. CTD001148568	Mallory manufactures cams for aircraft and other industry.	Tumbling wastewater Water soluble oils Mineral spirits Alkaline soap solution Nitric acid Phosphoric acid Waste oil Solvents Waste oil	1965 to present 1965 to present 1965 to present 1965 to present 1965 to present 1965 to present 1983 to 1995 1983 to 1992 1976 to 1983	1965 to 1986 1965 to 1986 1965 to 1986 1965 to 1986 1965 to 1986 1965 to 1986 Unknown Unknown Unknown	Northeastern drywell Northeastern drywell Northeastern drywell Northeastern drywell Northeastern drywell Northeastern drywell Abandoned waste oil UST Abandoned waste solvent UST Removed waste oil UST
New England Aircraft Plant #1 CTD059831479	NEAP #1 manufactures jet aircraft engine blades and vanes.	Anti-rust compound Zyglo solution Fluorescent penetrant rinse waters Metal hydroxide sludge TPH TPH TPH and waste oil Sodium chloride	1961 to present 1961 to present 1961 to present 1961 to present Unknown Unknown 1977 to present 1961 to present	1961 to 1981 1961 to 1981 1961 to 1981 1961 to 1980 Unknown Unknown Unknown Unknown	Two septic systems Two septic systems Two septic systems Eastern parking lot Loading dock area Air compressor area Waste oil ASTs ECM treatment shed
New England Aircraft Plant #2 CTD982710535	NEAP #2 manufactured jet aircraft engine parts.	Spent chromic acid (CrO_3) Waste solvents	1963 to 1976 1963 to 1976	1963 to 1976 1963 to 1976	Drywell Drywell
Roy Machinery and Sales CTD001143957	Roy performs general metal machining; paint spraying; cleaning; testing.	Unspecified industrial wastes Agitene	1957 to 1976 Unknown	1957 to 1976 Unknown	Septic system Ground west of building

Table 3

Summary of Substances and Source Areas Associated with Properties Located in the Farmington Industrial Park (Concluded)

Property & CERCLIS No.	Type of Operation	Associated Substances	Years of Use and Storage	Years of Disposal	Source Areas
Mott Metallurgical Corp. CTD980524193	Mott manufacture sintered metallic filters.	1,1,1-TCA	1969 to 1975	1969 to 1975	Drywell
		MEK	1969 to 1975 1976 to 1981 1981 to present	1969 to 1975 Off-site disposal Off-site disposal	Drywell Two, 500-gallon USTs 1,000-gallon UST
		Acetone	1969 to 1975 1976 to 1981 1981 to present	1969 to 1975 Off-site disposal Off-site disposal	Drywell Two, 500-gallon USTs Drum storage area
		Propanol	1969 to 1975 1976 to 1981 1981 to present	1969 to 1975 Off-site disposal Off-site disposal	Drywell Two, 500-gallon USTs Drum storage area
		Waste machine oil	1979 to present	Off-site disposal	Drum storage area
		Phosphoric acid	1969 to 1975 1976 to 1981 1981 to present	1969 to 1975 Off-site disposal Off-site disposal	Drywell Two, 500-gallon USTs 1,000-gallon UST
		Nitric Acid	1969 to 1975 1976 to 1981 1981 to present	1969 to 1975 Off-site disposal Off-site disposal	Drywell Two, 500-gallon USTs 1,000-gallon UST
		Metal salts	1969 to 1975 1976 to 1981 1981 to present	1969 to 1975 Off-site disposal Off-site disposal	Drywell Two, 500-gallon USTs 1,000-gallon UST

WASTE/SOURCE SAMPLING

On August 8, 1989, NUS/FIT collected seven shallow soil samples from the Edmunds property, including a background soil sample (SS-06), a replicate/duplicate soil sample (SS-04D), and a trip blank sample (SS-01) (Figure 2). Samples were analyzed through the EPA Contract Laboratory Program (CLP) for Target Compound List (TCL) VOCs and Target Analyte List (TAL) inorganic elements and cyanide [1, p. 7]. Pesticide and polychlorinated biphenyl (PCB) analyses were not performed.

Soil sample SS-06 was chosen as a background sample location because it was not associated with any sources at the property, and was collected from an area which was apparently undisturbed by Edmunds operations. Table 4 summarizes NUS/FIT source samples collected on the Edmunds property [1, p. 7, Table 3].

Table 4

Source Sample Summary: Edmunds Manufacturing Company, Samples Collected by NUS/FIT on August 8, 1989

Sample Location No.	Traffic Report No.	Remarks	Sample Source
MATRIX: SOIL			
SS-01	AQ176	Grab	Trip blank soil sample. Baked sand.
SS-02	AQ177 MAL926	Grab (4.0 feet)	Soil sample near southwest corner of building. Located near the 3,000-gallon waste oil tank and loading dock.
SS-03	AQ178 MAL927	Grab (2.5 feet)	Soil sample near drywell. Located on west side of manufacturing building.
SS-04	AQ179 MAL928	Grab (0.5 feet)	Soil sample of stained soils at edge of building. Wall of building stained and crumbling in this area.
SS-04D	AQ180 MAL929	Grab (0.5 feet)	Duplicate of SS-04.
SS-05	AQ181 MAL930	Grab (3.0 feet)	Soil sample of leach field for sanitary septic tank on the west side of the manufacturing building.
SS-06	AQ182 MAL931	Grab (3.0 feet)	Background soil sample on western edge of property.

D = Duplicate.

Table 5 is a summary of organic compounds and inorganic elements detected through CLP analyses of NUS/FIT source samples [1, pp. 7-8, Attachments C and D]. For each sample location, a compound or element is listed if it was detected at three times or greater than the reference sample concentration (SS-06). However, if the compound or element was not detected in the reference sample, the reference sample's quantitation limit (SQL) (for organic analyses) or sample's detection limit (SDL) (for inorganic analyses) is used as the reference value. These compounds or elements are listed if they occurred at a value equal to or greater than the reference sample's SQL or SDL and are designated by their approximate relative concentration above these values.

Table 5

Summary of Analytical Results,
Source Sample Analysis for Edmunds Manufacturing Company:
Samples Collected by NUS/FIT on August 8, 1989

Sample Location	Compound/Element	Sample Concentration			Reference Concentration			Comments
SS-02 (AQ177) (MAL926)	**INORGANICS**							
	Arsenic	1.60		ppm	0.87	U	ppm	1.8 × SDL
	Calcium	805.0		ppm	258.0		ppm	3.1 × REF
	Lead	26.3		ppm	3.9		ppm	6.7 × REF
	Mercury	1.7		ppm	0.10		ppm	17.0 × REF
SS-03 (AQ178) (MAL927)	**INORGANICS**							
	Arsenic	2.4		ppm	0.87	U	ppm	2.8 × SDL
	Cadmium	0.86		ppm	0.54	U	ppm	1.6 × SDL
	Lead	11.6		ppm	3.9		ppm	3.0 × REF
SS-04 (AQ179) (MAL928)	**INORGANICS**							
	Arsenic	2.5		ppm	0.87	U	ppm	2.9 × SDL
	Barium	70.7		ppm	26.0	U	ppm	2.7 × SDL
	Cadmium	1.3		ppm	0.54	U	ppm	2.4 × SDL
	Calcium	5,830.0		ppm	258.0		ppm	22.6 × REF
	Chromium	225.0		ppm	10.1		ppm	22.5 × REF
	Lead	31.9		ppm	3.9		ppm	8.2 × REF
	Sodium	3,980.0	J	ppm	45.5	J	ppm	87.5 × REF
	Zinc	147.0	J	ppm	27.2	J	ppm	5.4 × REF
	Cyanide	4.6	J	ppm	1.1		ppm	4.2 × REF

Table 5

Summary of Analytical Results, Source Sample Analysis for Edmunds Manufacturing Company: Samples Collected by NUS/FIT on August 8, 1989 (Concluded)

Sample Location	Compound/Element	Sample Concentration	Reference Concentration	Comments
SS-04D (AQ180) (MAL929)	**INORGANICS**			
	Arsenic	2.3 ppm	0.87 U ppm	2.6 × SDL
	Barium	87.8 ppm	26.0 ppm	3.4 × REF
	Calcium	3,650.0 ppm	258.0 ppm	14.1 × REF
	Chromium	186.0 ppm	10.1 ppm	18.4 × REF
	Lead	33.7 ppm	3.9 ppm	8.6 × REF
	Sodium	3,400.0 J ppm	45.5 J ppm	74.7 × REF
	Zinc	84.1 J ppm	27.2 J ppm	3.1 × REF
	Cyanide	3.7 J ppm	1.1 ppm	3.4 × REF
SS-05 (AQ181) (MAL930)	**INORGANICS**			
	Arsenic	2.1 ppm	0.87 U ppm	2.4 × SDL
	Calcium	1,050.0 ppm	258.0 ppm	4.1 × REF

U = Substance not detected in reference sample.
J = The associated numerical value is an estimated quantity.
ppm = Parts per million.
REF = Reference value.

No organic compounds were detected in any of the soil samples collected by NUS/FIT on the Edmunds property. Nine inorganic elements were detected in soil samples collected by NUS/FIT which ranged in concentration from 1.6 times the SDL to 87.5 times the reference sample concentration. The highest concentrations of inorganic substances were reported for sodium, calcium, chromium, and mercury at 87.5, 22.6, 22.5 and 17.0 times the reference sample concentrations. The detection of arsenic, cadmium, chromium, lead, and mercury on the Edmunds property is consistent with current and former manufacturing processes and wastes historically generated at the Edmunds property. Cyanide was also detected in soil samples collected at the Edmunds property by NUS/FIT and is associated with on-site manufacturing processes; however, values associated with cyanide were estimated or J'd. Cyanide was detected at approximately 4.6 times the reference sample concentration. WESTON has included the detected concentration of cyanide in Table 5 based on technical directives provided by EPA Region I. The complete analytical results of the NUS/FIT sampling are included in Attachment A.

It is unlikely that the soil samples collected by NUS/FIT were collected deep enough to characterize the drywell, UST, or the former leach field. In addition to the soil samples collected by NUS/FIT on August 8, 1989, a soil sample was collected from the area of stained soil by the CT DEP on this date. Three organic compounds (acetone, methanol, and MEK) and seven inorganic compounds (cadmium, chromium, lead, arsenic, barium, silver, and mercury) were detected in the CT DEP soil sample [1, pp. 7-8; 7]. The complete analytical results of the CT DEP sampling are included in Attachment E.

GROUNDWATER PATHWAY

Prior to 1965, the property was used as farm land [1, p. 2]. Soil maps of Hartford County report the soil type at the Edmunds property as Manchester Gravelly Loam [58]. The surficial geology of the area beneath the Edmunds property has been mapped as glacial collapsed stratified drift deposits [16]. These deposits are associated with deltaic deposits comprised of stratified sand and gravel, overlying glacial till. The occurrence of sand and gravel in the deposits indicate that the overburden permeability at the site is moderate to high [1, p. 6; 8]. The underlying glacial till is presumed to be present continuously beneath sand and gravel throughout the Pequabuck River valley within a two-mile radius of the property, based on its occurrence in all of the boring logs for monitoring wells installed in the vicinity of Scott Swamp Brook and the Pequabuck River [18, Appendix 1].

The bedrock geology beneath the property has been mapped as the Triassic New Haven Arkose, which makes up a large part of the Central Lowlands of Connecticut. The New Haven Arkose is a reddish, poorly-sorted sandstone and conglomerate. This central region of Connecticut contains several large fault zones that strike approximately North 50° East, with dip angles near vertical [17].

An inactive private groundwater production well, located approximately 2,500 feet southeast of the Edmunds property, is completed in bedrock at a depth of approximately 165 feet below ground surface (bgs). The well was noted to exist under flowing artesian conditions (with a potentiometric surface above the ground surface) by WESTON personnel on April 17, 1995 [19; 23, p. 48]. The top of the overburden water table at this location is approximately 30 feet bgs [19]. These observations indicate that the potentiometric surface in the bedrock is greater than that in the overburden by at least 30 feet. Therefore, any groundwater flow between the two units would tend to be from the higher potentiometric surface to the lower, in this case, from bedrock to overburden [20, pp. 21, 48-49].

Approximately 0.22 miles east of the Edmunds property, overburden becomes much thicker, and a glaciolacustrine varved silt and clay unit, between 86 to 205 feet thick and one mile wide, occurs within the overburden. This layer partially separates unconfined and confined portions of the Pequabuck River valley overburden aquifer [18, pp. 22, Figure 7]. Although the silt and clay layer strongly restricts groundwater flow between the two parts of the overburden aquifer, aquifer tests have demonstrated interconnection between the unconfined and confined parts of the overburden aquifer, in particular in the stratified drift deposits located north and west of the FIP and Johnson Avenue Wells [18, p. 22]. The Edmunds property is located above stratified drift deposits northwest of these wells, in an area noted to be a recharge area for the lower portion of

the Pequabuck River valley overburden aquifer [18, p. 22]. Further, since the silt and clay layer is not present beneath the Edmunds property, the silt and clay layer does not meet the CERCLA definition of a confining layer [18, Figure 7; 24, p. 51601].

Typical hydraulic conductivities for sand and gravel range from 10^{-4} to 10^{-2} centimeters per second (cm/s), typical hydraulic conductivities for glacial till range from 10^{-6} to 10^{-4}, and typical hydraulic conductivities for fractured sedimentary rock are approximately 10^{-4} cm/s [24, p. 51601]. For the purposes of this report, the glacial till which underlies the Pequabuck River valley overburden aquifer is considered to constitute a continuous, low-permeability layer which separates overburden and bedrock aquifers beneath the property and throughout the aquifer [24, p. 51601]. Further, the observed hydraulic gradient between the overburden and bedrock aquifers in the vicinity of the FIP indicates that groundwater flow between the two aquifers would be primarily from bedrock to overburden. While it is possible that contaminant flow from the overburden to the bedrock aquifer may occur under the overall groundwater flow regime if dense non-aqueous phase liquid is present, existing hydrogeological data, as well as analytical data support an aquifer discontinuity [22, p. 5; 23, pp. 21, 48-49].

The Pequabuck River valley overburden aquifer, in the vicinity of Scott Swamp Brook, is bordered to the west by collapsed stratified drift, kame, and glacial till deposits, to the east by bedrock outcrops. The Pequabuck River valley overburden aquifer begins at the Quinnipiac River valley in the south, and terminates beneath the Farmington River in Avon, Connecticut [18, p. 22]. The direction of groundwater flow within the Pequabuck River valley overburden aquifer during the pumping of the public water supply wells located southeast of the Edmunds property was radially toward these wells. Beneath the Edmunds property, the direction of groundwater flow is east-northeast, eventually turning south and flowing toward the FIP and Johnson Avenue Wells [18, Figure 9]. The average annual rainfall for the Town of Farmington is 49.06 inches [14].

All or part of the following Connecticut cities and towns are located within four-radial miles of the FIP properties: Bristol (population 60,640), Burlington (population 7,026), New Britain (population 72,513), Farmington (population 20,608), Plainville (population 17,197), and Southington (population 38,000) [21, pp. 63-64; 28; 44; 45; 42; 43].

The Bristol Water Department (BWD) of the Town of Bristol operates two separate public water supplies. One is located in the western part of the town, and relies on combined groundwater and surface water sources located more than four-radial miles and 15-downstream miles from the property [22, p. 50; 25; 26]. The second supply is located in the northeastern part of the town and serves 20,000 persons. The supply obtains water from four wells located within four miles of the property. BWD Well No. 2 is drilled in overburden 75 feet deep and is located approximately 2.2 miles southwest of the property, and contributes 50 percent of the total supply [22, p. 50; 25; 26]. The other 50 percent of the supply (no further breakdown is available) is obtained from the three Mix Street Wells, which are overburden wells, 55 feet deep, and are located approximately 2.5 miles west of the property [22, p. 50; 25; 26]. For the purposes of this report, the three Mix Street Wells are assumed to contribute equally to the system, and each serve 3,334 persons [25]. The remainder of the population of Bristol is presumed to rely on private drinking water wells and groundwater sources from outside of the four-mile radius to the property.

A small section of the southeast corner of the Town of Burlington is located within the four-mile target distance limit. No major public water supplies have been identified in this area; however there are two community water supplies in that area of Burlington: the Farmington Line West Condominium Well, 2.6 miles northwest of the property, as well as the Woodcrest Association Well, which is 2.7 miles northwest of the property. The wells serve 34 and 60 persons, respectively; no data regarding depth are available [23; 25; 30; 31]. Much of the Town of Burlington relies on private wells.

Four public water supplies provide drinking water to most of the residents of Farmington [32]. The New Britain Water Department (NBWD) supplies water to an estimated 90,677 persons, including residents of Farmington, Kensington, New Britain, Newington and Plainville. The supply is provided from seven groundwater wells and six reservoirs which are not located downstream of the FIP properties [22, p. 51; 43]. One pair of overburden groundwater wells, known as the White Bridge Wells and operated by the NBWD, is located approximately 2.1 miles west of the property [25; 43]. The White Bridge Wells provide 28.6 percent of the total annual water supply for NBWD, and serve 25,900 persons.

The Metropolitan District Commission (MDC) supplies water to some residents of Farmington, as well as other communities in the greater Hartford area. The supply is provided from reservoirs which are not located downstream of the FIP properties [22, pp. 35, 36; 32].

The Plainville Water Company (PWC) provides drinking water to residents of Farmington and Plainville. The PWC maintains a blended system of five overburden wells which serve a total of 20,000 people. Prior to distribution, water from these wells is air-stripped. The two PWC overburden wells located between 0.59 and 0.62 miles southeast of the property are known as the Johnson Avenue Wells and account for 27.4 percent of the system's annual total water supply, and serve an estimated 5,480 persons [25]. These wells are screened in the lower portion of the Pequabuck River valley overburden aquifer, at depths of 80 to 93 and 92 to 110 feet bgs, respectively [18, Appendix 1]. The three PWC Wells located 2.30 miles southeast of the property are known as the Woodford Avenue Wells and supply 72.6 percent of the system's annual total water supply, serving an estimated 14,520 persons [22, p. 51; 25; 33; 34; 35]. These wells are also screened in the Pequabuck River valley overburden aquifer, at a point upgradient of the FIP area [18, Figures 3 and 5; 22, p. 51].

The Unionville Water Company (UWC) provides drinking water to many residents in Farmington. The UWC system consists of eight wells at four locations in Farmington. Of these eight wells, all except four of the five Charles House Wells are located within four miles of the Edmunds property. One of the Charles House Wells is located approximately 3.98 miles northeast of the property; the well is screened in overburden and serves an estimated 1,773 persons. The entire system serves a total of 12,700 persons [23]. Calculations for population apportionment are based on the total annual contribution to the system [22, p. 35; 25; 27; 35; 36]. None of these wells are completed in the Pequabuck River valley overburden aquifer, although the Wells Acres Well, which is screened in bedrock, is located only 0.2 miles northwest of the Edmunds property [22, p. 51]. The Wells Acres Well was sampled by WESTON personnel on July 12, 1995; the analytical results from the well are discussed in the Groundwater Section of this report [3, p. 16]. The UWC maintains the Pondwood Well located approximately 2.6 miles northwest of the property; the well is screened in bedrock and serves an estimated 406 persons [25].

The UWC also maintains four wells which provide water to the FIP; named FIP Nos. 1 through 4. Available information suggests that this water is used for both manufacturing processes at the FIP and for potable purposes. Several businesses in the FIP use bottled drinking water. The wells serve an estimated 1,026 workers at businesses within the FIP [44]. The wells are located immediately southeast of the FIP (Figure 1B) [22, p. 35; 25; 36]. The annual contribution of each well to the system is based on 1994 annual production figures [25; 37]. All four of the wells are screened in the lower portion of the Scott Swamp Brook valley overburden aquifer [18, pp. 3-4]. The UWC also maintains the Connecticut Sand & Stone Well located in Farmington, 2.8 miles northeast of the property which serves an estimated 2,792 persons.

The NBWD supplies water to some residents of New Britain, as well as Farmington, Kensington, Newington and Plainville. The supply is provided from six reservoirs which are not located downstream of the FIP properties [22, p. 51; 34].

Most of Plainville is provided drinking water by the PWC and the NBWD. The Cope Manor rest home maintains a bedrock well which provides drinking water to an estimated 92 patients and staff and is located approximately 1.5 miles southwest of the property [23; 38]. Ciccio Court Apartments, located approximately 3.25 miles south of the property, also maintains a well in Plainville serving an estimated 80 people [22, p. 35; 23].

Parts of Southington lie within four-radial miles of the Edmunds property, but there are no Southington public water supplies that are located within the four-radial miles of the Edmunds property [42]. One community water supply is located approximately 3.65 miles south of the property at Apple Valley Village Apartments, serving an estimated 70 people [22, pp. 50, 51; 23; 30]. Table 6 summarizes public groundwater supply sources located within four-radial miles of the Edmunds property [22, pp. 35, 36, 50, 51; 23; 25; 39; 40; 41; 42].

Table 6

Public Groundwater Supply Sources within Four-Radial Miles of Edmunds Manufacturing Company

Distance/ Direction from Site	Source Name	Location of Source	Estimated Population Served	Source Type
0.20 Miles Northwest	UWC Wells Acres	Farmington	457	1 bedrock well
0.49 Miles Southeast	FIP Well No. 4	Plainville	477	1 overburden well
0.51 Miles Southeast	FIP Well No. 3	Plainville	547	1 overburden well

Table 6

Public Groundwater Supply Sources within Four-Radial Miles of Edmunds Manufacturing Company (Concluded)

Distance/ Direction from Site	Source Name	Location of Source	Estimated Population Served	Source Type
0.53 Miles Southeast	FIP Well No. 1	Farmington	2	1 overburden well
0.59 Miles Southeast	FIP Well No. 2	Farmington	0	1 overburden well
0.59 Miles Southeast	PWC Johnson Avenue Well No. 6	Plainville	2,740	1 overburden well
0.62 Miles Southeast	PWC Johnson Avenue Well No. 3	Plainville	2,740	1 overburden well
1.50 Miles Southwest	Cope Manor	Plainville	92	1 bedrock well
2.10 Miles West	NBWD White Bridge Wells	Bristol	25,900	2 overburden wells
2.20 Miles Southwest	BWD Well No. 2	Bristol	10,000	1 overburden well
2.30 Miles Southeast	PWC Woodford Avenue Wells	Plainville	14,520	3 overburden wells
2.50 Miles West	BWD Mix Street Wells	Bristol	10,000	3 overburden wells
2.60 Miles Northwest	Farmington Line West Condominium	Burlington	34	Unknown
2.60 Miles Northwest	UWC Pondwood Well	Farmington	406	1 bedrock well
2.70 Miles Northwest	Woodcrest Association	Burlington	60	Unknown
2.80 Miles Northeast	UWC CT Sand & Stone Well	Farmington	2,792	1 overburden well
3.25 Miles South	Ciccio Court	Plainville	80	Unknown
3.65 Miles South	Apple Valley Village	Southington	70	Unknown
3.98 Miles Northwest	UWC Charles House Wells	Farmington	1,773	1 of 5 overburden wells

The number of persons who rely on private groundwater supplies within a four-mile radius of the FIP was reported by CENTRACTS which estimates groundwater populations using equal distribution calculations of U.S. Census data identifying population, households and private water wells for "Block Groups" which lie wholly or in part within individual radial distance rings measured from potential sources on the Edmunds property [15]. The nearest verified private well to the property is located approximately 1.2 miles northwest of the Edmunds property [4; 63, pp. 9-10]. Because the CENTRACTS report estimates private well use in each block and no private

wells have been identified less than one mile from the property, the population attributed to the 0 to 0.25, the 0.25 to 0.5, and the 0.5 to 1.0-mile rings in the CENTRACTS report has been shifted to the 1.0 to 2.0-mile distance ring. Table 7 summarizes the private well users within four miles of the Edmunds property [15; 22, pp. 35, 36, 50, 51; 23; 25].

Table 7

Estimated Drinking Water Populations Served by Groundwater Sources within Four-Radial Miles of Edmunds Manufacturing Company

Radial Distance from Edmunds Mfg. Co. (miles)	Estimated Population Served by Private Wells	Estimated Population Served by Public Wells	Total Estimated Population Served by Groundwater Sources within the Ring
0.00 < 0.25	0	457	457
0.25 < 0.50	0	477	477
0.50 < 1.00	0	6,029	6,029
1.00 < 2.00	1,396	92	1,488
2.00 < 3.00	2,839	63,712	66,551
3.00 < 4.00	3,654	1,923	5,577
TOTAL	**7,889**	**72,690**	**80,579**

According to State file information, the Connecticut Department of Health Services (CT DHS) initially collected and analyzed samples from the four FIP Wells and Johnson Avenue Well No. 3 in June 1975. Available records indicate that the Johnson Avenue Well No. 6 was first sampled in June 1982.

Analytical results from the June 1975 sampling round of the four FIP Wells and Johnson Avenue Well No. 3 indicated the presence of several VOCs at concentrations ranging from 20 to 1,000 ppb. The compounds present at the highest concentrations from the June 1975 sampling round included 1,1,1-TCA at 1,000 ppb, chloroform at 680 ppb, tetrachloroethylene (PCE) at 640 ppb, and TCE at 430 ppb. The highest concentrations of TCA, TCE, and chloroform were noted in samples collected from Johnson Avenue Well No. 3, and the highest concentration of PCE was detected in the sample collected from FIP Well No. 4.

Samples have been collected from the six affected wells intermittently from 1975 to the present, with the exception of Johnson Avenue Well No. 6, for which no analytical results are available prior to 1982 [1, p. 6]. A summary of these analytical results, through 1989, is included in Attachment C.

The concentration of chlorinated organics in the wells has generally decreased since their discovery in 1975, but were still present as of the latest sampling round conducted in the spring of 1995 [1, Attachment B; 28; 29]. The most recent analytical results available for the FIP Wells and the Johnson Avenue Wells are included in Attachment D.

Table 8 summarizes the results of sampling of the FIP and Johnson Avenue Wells [1, Attachment B; 28; 29]. The first data column notes the highest concentration of the substance and the sampling date. The second data column records the concentration of the same substance as detected in the most recent sampling event, in order to illustrate the trend of concentrations.

Table 8

Summary of Substances Detected in Drinking Water Wells in the Vicinity of the Farmington Industrial Park

Well	Substance	Highest Concentration/Date		Most Recent Concentration/Date		EPA MCL
FIP No. 1	Chloroform	20 ppb	06/02/75	NS		---
	1,1,1-TCA	ND		NS		200 ppb
	TCE	200 ppb	06/02/75	NS		5 ppb
	PCE	ND		NS		5 ppb
FIP No. 2	Chloroform	60 ppb	06/02/75	NS		---
	1,1,1-TCA	ND		NS		200 ppb
	TCE	85 ppb	06/02/75	NS		5 ppb
	PCE	160 ppb	06/02/75	NS		5 ppb
FIP No. 3	Chloroform	97 ppb	06/02/75	ND	01/11/95	---
	1,1,1-TCA	46 ppb*	03/20/80	4.1 ppb	01/11/95	200 ppb
	TCE	36 ppb	06/02/75	0.86 ppb	01/11/95	5 ppb
	PCE	73 ppb	06/02/75	1.2 ppb	01/11/95	5 ppb
FIP No. 4	Chloroform	77 ppb	06/02/75	ND	10/28/94	---
	1,1,1-TCA	25 ppb*	02/29/80	4.9 ppb	10/28/94	200 ppb
	TCE	53 ppb	06/02/75	0.95 ppb	10/28/94	5 ppb
	PCE	640 ppb	06/02/75	1.5 ppb	10/28/94	5 ppb
Johnson Avenue Well No. 3	Chloroform	680 ppb	06/02/75	ND	01/17/95	---
	1,1,1-TCA	1,000 ppb	06/20/75	19.7 ppb	01/17/95	200 ppb
	TCE	900 ppb	07/22/75	4.9 ppb	01/17/95	5 ppb
	PCE	60 ppb	06/02/75	14.0 ppb	01/17/95	5 ppb

Table 8

Summary of Substances Detected in Drinking Water Wells in the Vicinity of the Farmington Industrial Park (Concluded)

Well	Substance	Highest Concentration/Date		Most Recent Concentration/Date		EPA MCL
Johnson Avenue Well No. 6	Chloroform	ND		ND	01/17/95	---
	1,1,1-TCA	12.8	04/19/88	3.5 ppb	01/17/95	200 ppb
	TCE	34.8 ppb	09/06/88	21.0 ppb	01/17/95	5 ppb
	PCE	5.8 ppb	12/22/86	3.1 ppb	01/17/95	5 ppb

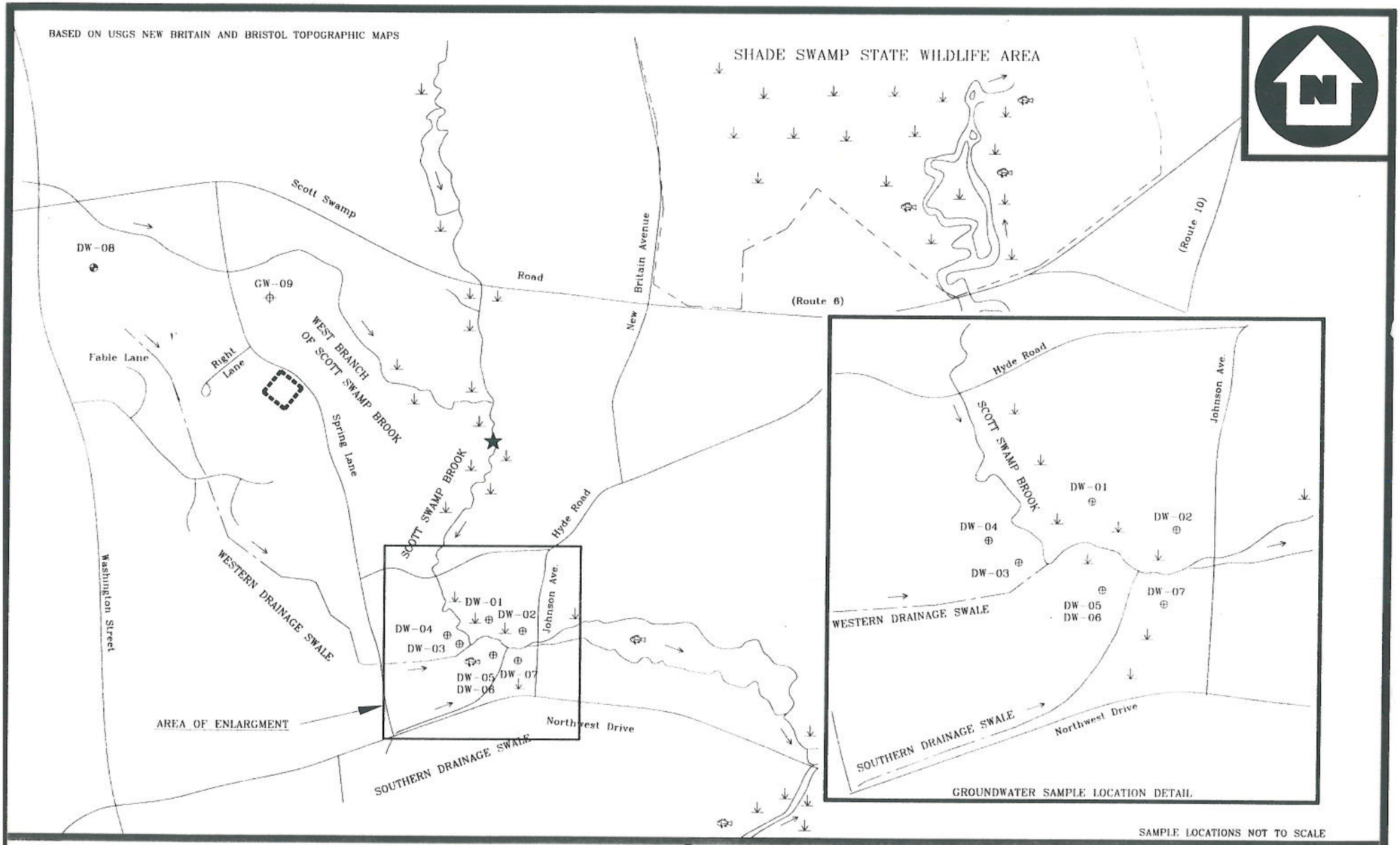
* A higher concentration of 1,1,1-TCA, 101 ppb, was detected in a composite sample of water from FIP Well Nos. 3 and 4 on October 3, 1983.

EPA MCL = EPA Maximum Contaminant Level.
ND = Not Detected.
NS = Not Sampled.
--- = No Value Listed.

On July 12, 1995, WESTON collected eleven groundwater and drinking water samples from one monitoring well and eight public supply wells in the vicinity of the FIP, including a reference groundwater sample (GW-09), replicate/duplicate samples (GW-03/04), a rinsate blank sample (RB-02), and a trip blank sample (TB-01) (Figure 3). Samples were analyzed through the EPA CLP for VOCs, semivolatile organic compounds (SVOCs), pesticide/polychlorinated biphenyls (PCBs), total metals and cyanide analyses. The VOC fraction of the samples was analyzed to lower detection limits by EPA Method 524.2 by the EPA Regional Laboratory [63, pp. 39-40].

Groundwater sample GW-09 was selected as a reference sample. GW-09 was collected from monitoring well MW-1 on the New England Aircraft Plant No. 1 property, located upgradient of potential sources of groundwater contamination that are identified within the vicinity of the FIP, including the New England Aircraft Plant No. 1 property [45]. None of the groundwater or drinking water samples collected by WESTON were filtered prior to collection.

Table 9 summarizes groundwater and drinking water samples collected during the WESTON FIP sampling event and Figure 3 shows the sampling locations [63, pp. 39-40].



GROUNDWATER SAMPLE LOCATION MAP

EDMUNDS MANUFACTURING COMPANY
FARMINGTON INDUSTRIAL PARK PROPERTIES
FARMINGTON/PLAINVILLE, CONNECTICUT

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 3

Table 9

Groundwater and Drinking Water Sample Summary: Edmunds Manufacturing Company Samples Collected by WESTON on July 12, 1995

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
MATRIX: AQUEOUS				
DW-01	DAR73 AHF21 MAGL38	10:15	Grab	Drinking water sample collected from FIP Well No. 1.
DW-02	DAR74 AHF22 MAGL39	11:15	Grab	Drinking water sample collected from FIP Well No. 2.
DW-03	DAR75 AHF23 MAGL40	09:45	Grab	Drinking water sample collected from FIP Well No. 3.
DW-04	DAR76 AHF24 MAGL41	10:05	Grab	Drinking water sample collected from FIP Well No. 4.
DW-05	DAR77 AHF25 MAGL42	14:00	Grab	Drinking water sample collected from PWC Johnson Avenue Well No. 6
DW-06	DAR78 AHF26 MAGL43	14:00	Grab	Duplicate of sample DW-05 collected for quality control.
DW-07	DAR79 AHF27 MAGL44	14:15	Grab	Drinking water sample collected from PWC Johnson Avenue Well No. 3.
DW-08	DAR80 AHF28 MAGL45	09:15	Grab	Drinking water sample collected from the UWC Wells Acres Well.
GW-09	DAR81 AHF29 MAGL46	12:55	Grab	Groundwater sample collected from monitoring well MW-01 on the New England Aircraft Plant No. 1 property, as a reference sample.
TB-02	DAR83	08:55	Grab	Trip Blank sample collected for quality control.
RB-02	DAR82 AHF33 MAGL50	09:00	Grab	Rinsate Blank sample collected for quality control.

Table 10 is a summary of organic compounds and inorganic elements detected through CLP analyses of WESTON drinking water samples. For each sample location, a compound or element is listed if it was detected at three times or greater than the reference sample concentration (GW-09). However, if the compound or element was not detected in the reference sample, the reference SQL (for organic analyses) or SDL (for inorganic analyses) is used as the reference value. These compounds or elements are listed if they occurred at a value equal to or greater than the reference sample's SQL or SDL and are designated by their approximate relative concentration above these values. Table 10 summarizes drinking water samples collected by WESTON on July 12, 1995 [46; 60].

Table 10

Summary of Analytical Results, Drinking Water
Sample Analysis for Edmunds Manufacturing Company:
Samples Collected by WESTON on July 12, 1995

Sample Location	Compound/Element	Concentration	Reference Concentration	Comments
DW-01 DAR73 AHF21 MAGL38	**VOCS**			
	1,1,1-TCA	31 µg/L	2 U µg/L	15.50 × SQL
	TCE	4.2 µg/L	2 U µg/L	2.10 × SQL
	SVOCS			
	Naphthalene	2.4 µg/L	2 U µg/L	1.20 × SQL
DW-02 DAR74 AHF22 MAGL39	**VOCS**			
	1,1-DCE	2.1 µg/L	2 U µg/L	1.05 × SQL
	1,1,1-TCA	16 µg/L	2 U µg/L	8.00 × SQL
	TCE	4.9 µg/L	2 U µg/L	2.45 × SQL
	cis-1,2-DCE	6.6 µg/L	2 U µg/L	3.30 × SQL
	PCE	25 µg/L *	2 U µg/L	12.50 × SQL
DW-03 DAR75 AHF23 MAGL40	**VOCS**			
	1,1,1-TCA	4.9 µg/L	2 U µg/L	2.45 × SQL
DW-04 DAR76 AHF24 MAGL41	**VOCS**			
	cis-1,2-DCE	10 µg/L	2 U µg/L	5.00 × SQL
	PCE	2.7 µg/L	2 U µg/L	1.35 × SQL

Table 10

Summary of Analytical Results, Drinking Water Sample Analysis for Edmunds Manufacturing Company: Samples Collected by WESTON on July 12, 1995 (Concluded)

Sample Location	Compound/Element	Concentration	Reference Concentration	Comments
DW-05 DAR77 AHF25 MAGL42	**VOCS**			
	TCE	13 µg/L *	2 U µg/L	6.50 × SQL
	cis-1,2-DCE	5.6 µg/L	2 U µg/L	2.80 × SQL
	1,2,3-Trichlorobenzene	2 µg/L	2 U µg/L	1.00 × SQL
	SVOCS			
	Naphthalene	4.3 µg/L	2 U µg/L	2.15 × SQL
DW-06 DAR78 AHF26 MAGL43	**VOCS**			
	TCE	13 µg/L *	2 U µg/L	6.50 × SQL
	cis-1,2-DCE	5.6 µg/L	2 U µg/L	2.80 × SQL
DW-07 DAR79 AHF27 MAGL44	**VOCS**			
	1,1,1-TCA	10 µg/L	2 U µg/L	5.00 × SQL
	TCE	2.7 µg/L	2 U µg/L	1.35 × SQL
	cis-1,2-DCE	2.3 µg/L	2 U µg/L	1.15 × SQL
	PCE	7.4 µg/L *	2 U µg/L	3.70 × SQL

*Concentration exceeds the maximum contaminant level (MCL).

µg/L = Micrograms per liter.
1,1-DCE = 1,1-Dichloroethylene.
cis-1,2-DCE = cis-1,2-Dichloroethylene.

Several VOCs were detected at elevated concentrations in drinking water samples submitted for analysis; sample concentrations ranged from 1.0 to 15.5 times the SQL. The following VOCs were detected at concentrations that exceed current MCLs; PCE at 25 and 7.4 µg/L in DW-02 and DW-07, respectively and TCE at 13 µg/L in DW-05 and DW-06. The EPA MCL for PCE is 5 µg/L. The concentrations of PCE detected in drinking water samples DW-02 and DW-07 are 5.0 and 1.5 times the MCL, respectively. The MCL for TCE is 5 µg/L. The concentration of TCE detected in drinking water samples DW-05 and DW-06 is 2.6 times the MCL in both samples.

The SVOC naphthalene was also detected between 1.2 and 2.15 times the SQL. Naphthalene is a component of petroleum fractions and may be considered a constituent of waste oils, cutting oils, and lubricating oils. No pesticide/PCB or inorganic elements were detected in any of the WESTON drinking water samples collected to evaluate the property. The complete analytical results of the 1995 WESTON sampling event are included in Attachment B.

Comparisons can be drawn between historical drinking water analytical results and the more recent analytical results to determine potential trends of contamination. The following is a description of analytical concentrations for certain contaminants detected in the FIP and Johnson Avenue Wells, including the date of a contaminant's highest concentration in a particular well and current status of the well with respect to the contaminant.

Chloroform

The highest concentration of chloroform in FIP Well No. 1 was detected at 20 µg/L on June 2, 1975. Analytical results from the WESTON sampling event, conducted on July 12, 1995, indicated that chloroform was not present above the detection limits in this well [46; 60; 61].

The highest concentration of chloroform in FIP Well No. 3 was detected at 97 µg/L on June 2, 1975. Analytical results from January 11, 1995, indicate that the concentration of chloroform in this well had diminished to a non-detectable value. Results from the WESTON sampling event also indicated a non-detectable value of chloroform in FIP Well No. 3 [46; 60; 61].

The highest concentration of chloroform in FIP Well No. 4 was detected at 77 µg/L on June 2, 1975. Analytical results from October 28, 1994, indicated that the concentration of chloroform in this well had diminished to a non-detectable value. Results from the WESTON sampling event also indicate a non-detectable value of chloroform in FIP Well No. 4 [46; 60; 61].

The highest concentration of chloroform in Johnson Avenue Well No. 3 was detected at 680 µg/L on June 2, 1975. Analytical results from January 17, 1995, indicate that the concentration of chloroform in this well had diminished to a non-detectable value. Results from the WESTON sampling event, on July 12, 1995, also indicate a non-detectable value of chloroform in Johnson Avenue Well No 3. Chloroform has never been detected above detection limits in Johnson Avenue Well No. 6 [46; 60; 61].

Based on the analytical results, it appears that the presence of chloroform in the FIP and Johnson Avenue Wells may have been an isolated incident. Chloroform does not appear to be a continuing source of contamination in the FIP and Johnson Avenue Wells. Based on operational records provided by Edmunds and prior analytical data from soil source samples collected by NUS/FIT and CT DEP, chloroform is not considered attributable to Edmunds for the purposes of this SIP.

1,1,1-Trichloroethane

Prior to the WESTON sampling event on July 12, 1995, 1,1,1-TCA had never been detected in FIP Well Nos. 1 or 2. However, analytical results from the WESTON sampling event indicated that 1,1,1-TCA is present in FIP Well No. 1 at 31 µg/L and FIP Well No. 2 at 16 µg/L [61].

The highest concentration of 1,1,1-TCA in FIP Well No. 3 was detected at 46 µg/L on March 20, 1980. On January 11, 1995, the concentration of 1,1,1-TCA had diminished to 4.1 µg/L. The WESTON January 11, 1995 sampling event revealed that the 1,1,1-TCA concentration has slightly increased to 4.9 µg/L in FIP Well No. 3 [61].

The highest concentration of 1,1,1-TCA in FIP Well No. 4 was detected at 25 µg/L on February 29, 1980. On October 28, 1994, the concentration of 1,1,1-TCA had decreased to 4.9 µg/L. The WESTON sampling event indicated that the 1,1,1-TCA concentration had diminished below detectable limits in FIP Well No. 4 [61].

The highest concentration of 1,1,1-TCA in Johnson Avenue Well No. 3 was detected at 1,000 µg/L on June 20, 1975. This concentration exceeds the 1,1,1-TCA MCL (established at 200 µg/L) by four times. A January 17, 1995 sampling event indicated that this concentration had decreased to 19.7 µg/L, substantially below the MCL. A 1,1,1-TCA concentration of 10 µg/L was detected in Johnson Avenue Well No. 3 by WESTON during the July 12, 1995, sampling event [61].

The highest concentration of 1,1,1-TCA in Johnson Avenue Well No. 6 was detected at 12.8 µg/L on April 19, 1988. A January 17, 1995 sampling event indicated that this concentration had decreased to 3.5 µg/L. The WESTON sampling event indicated that the 1,1,1-TCA concentration had diminished below detectable limits in Johnson Avenue Well No. 6 [61].

Based on the analytical results, it appears that the presence of 1,1,1-TCA in FIP Wells No. 1 and 2 may be the result of an accumulation of the contaminant in the overburden material, despite a 15-minute purge period prior to sample collection. These two wells are used for back-up purposes and, at the time of sample collection on July 12, 1995, had not been pumping for several weeks [61].

The concentrations of 1,1,1-TCA in the wells have illustrated steady declines over time, with the exception of FIP Well No. 3, which displayed a slightly elevated concentration. 1,1,1-TCA may be considered attributable to Edmunds, since it was recorded that CT DEP Water Compliance Unit analytical data, dated February 6, 1989, had identified 1,1,1-TCE (sic) as one of the substances that Edmunds was discharging into the municipal sewer system [1, p. 3]. 1,1,1-TCA may degrade in soils and groundwater to 1,1-DCE, 1,1-DCA, cis-1,2-DCE, chloroethane, vinyl chloride, and acetic acid [64; 65]. The degradation of 1,1,1-TCA to 1,1-DCE and cis-1,2-DCE may explain the reported concentration of these substances in several FIP drinking water wells which were sampled.

Trichloroethylene

The highest concentration of TCE in FIP Well No. 1 was detected at 200 µg/L on June 2, 1975. This concentration exceeds the MCL for TCE (established at 5 µg/L) by 40 times. Analytical results from the WESTON sampling event indicated that the concentration of TCE in FIP Well No. 1 has diminished to 4.2 µg/L [61].

The highest concentration of TCE in FIP Well No. 2 was detected at 85 µg/L on June 2, 1975. This concentration exceeds the MCL for TCE by 17 times. Analytical results from the WESTON sampling event indicated that the concentration of TCE in FIP Well No. 2 has diminished to 4.9 µg/L [61].

The highest concentration of TCE in FIP Well No. 3 was detected at 36 µg/L on June 2, 1975. This concentration exceeds the MCL for TCE by more than seven times. On January 11, 1995, the concentration of TCE was detected at 0.86 µg/L in this well. Analytical results from the WESTON sampling event indicated that the concentration of TCE in FIP Well No. 3 has further diminished to below detectable levels [61].

The highest concentration of TCE in FIP Well No. 4 was detected at 53 µg/L on June 2, 1975. This concentration exceeds the MCL for TCE by more than ten times. On October 28, 1994, the concentration of TCE was detected at 0.95 µg/L in this well. Analytical results from the WESTON sampling event indicated that the concentration of TCE in FIP Well No. 4 has further diminished to below detectable levels [61].

The highest concentration of TCE in Johnson Avenue Well No. 3 was detected at 900 µg/L on July 22, 1975. This concentration exceeds the MCL for TCE by 180 times. On January 17, 1995 the concentration of TCE was detected at 4.9 µg/L in this well. Analytical results from the WESTON sampling event indicated that the concentration of TCE in Johnson Avenue Well No. 3 has further diminished to 2.7 µg/L [61].

The highest concentration of TCE in Johnson Avenue Well No. 6 was detected at 34.8 µg/L on September 6, 1988. This concentration exceeds the MCL for TCE by nearly seven times. On January 17, 1995, the concentration of TCE was detected at 21.0 µg/L in this well. Analytical results from the WESTON sampling event indicated that the concentration of TCE in Johnson Avenue Well No. 6 has further diminished to 13 µg/L. Despite the steady decline of TCE in this well, the current concentration exceeds the MCL by more than two times [61].

The concentrations of TCE in the FIP and Johnson Avenue Wells have consistently declined over time. All concentrations, originally significantly above the MCL, have diminished to below the MCL, with the exception of Johnson Avenue Well No. 6, which is still greater than two times the MCL. Records provided by Edmunds, and CT DEP Water Compliance Unit analytical results of Edmunds discharge to the municipal sewer system indicate that TCE was used at Edmunds and may be attributed to the processes at the manufacturing building [1, pp. 7-9; 10]. TCE may degrade in soils and groundwater to cis-1,2-DCE and vinyl chloride [64; 65].

Tetrachloroethylene

PCE has not been previously detected in FIP Well No 1. The highest concentration of PCE in FIP Well No. 2 was detected at 160 µg/L on June 2, 1975. This concentration exceeds the MCL for PCE (established at 5 µg/L) by 32 times. The WESTON sampling event revealed that PCE has decreased to 25 µg/L in this well. This concentration still exceeds the MCL by five times [63].

The highest concentration of PCE in FIP Well No. 3 was detected at 73 µg/L on June 2, 1975. On January 11, 1995, the concentration of PCE in this well had dropped to 1.2 µg/L. The WESTON sampling event indicated that PCE was not detected above detection limits in FIP Well No. 3 [63].

The highest concentration of PCE in FIP Well No. 4 was detected at 640 µg/L on June 2, 1975, at 128 times the MCL. As of October 28, 1994, the concentration had dropped to 1.5 µg/L. The July 12, 1995 WESTON sampling event revealed that the concentration of PCE had raised slightly to 2.7 µg/L. Despite the increase, the concentration remains below the MCL [63].

The highest concentration of PCE in Johnson Avenue Well No. 3 was detected at 60 µg/L on June 2, 1975, at 12 times the MCL. As of January 17, 1995, this concentration had decreased to 14.0 µg/L. The WESTON sampling event indicated that the concentration of PCE in Johnson Avenue Well No. 3 was still above the MCL, at 7.4 µg/L [63].

The highest concentration of PCE in Johnson Avenue Well No. 6 was detected at 5.8 µg/L on December 22, 1986, slightly above the MCL. As of January 17, 1995, this concentration had decreased to 3.1 µg/L. The WESTON sampling event indicated that the concentration of PCE in Johnson Avenue Well No. 6 had decreased to below detection limits [63].

In general, PCE concentrations have steadily declined over time in the FIP and Johnson Avenue Wells; however, two of the drinking water wells, FIP Well No. 2 and Johnson Avenue Well No. 3, still contain concentrations above the MCL. Based on operational records provided by Edmunds and soil source samples collected by NUS/FIT and CT DEP, PCE will not be considered attributable to the Edmunds property. PCE may degrade in soils and groundwater to TCE, 1,2-DCE, and vinyl chloride [64; 65].

SURFACE WATER PATHWAY

Overland flow, which includes roof drainage, from the Edmunds property travels south to a drainage swale, which begins at 55 Spring Lane, and is directed to the southeast. Additional overland flow from the property is collected at a storm drain located in the northeast corner of the property and is directed to a drainage swale located just south of the property on the opposite side of Spring Lane (Figure 2). The drainage swales converge approximately 300 feet southeast of the property and join a fairly diffuse intermittent stream channel which crosses several residential and commercial properties, mostly via an underground pipe, flowing south and southeast. The intermittent stream channel discharges into an unnamed wetland area and into the Scott Swamp Brook just south of the confluence of the West Branch of the Scott Swamp Brook

and the Scott Swamp Brook [3, p. 10; 4; 47]. The total overland flow distance is approximately 0.50 miles [47].

Scott Swamp Brook flows east approximately 1.25 miles to discharge into the Pequabuck River, which flows approximately 2.32 miles north through the Shade Swamp State Wildlife Area to discharge into the Farmington River. The 15-mile downstream point from the Edmunds property is located in the vicinity of the Route 315 bridge crossing the Farmington River in Simsbury, Connecticut (Figure 4) [47]. Table 11 summarizes the characteristics of the water bodies within 15-downstream miles of the Edmunds property [49; 50; 51; 52; 55; 62].

Table 11

Water Bodies Along the 15-mile Downstream Pathway from Edmunds Manufacturing Company

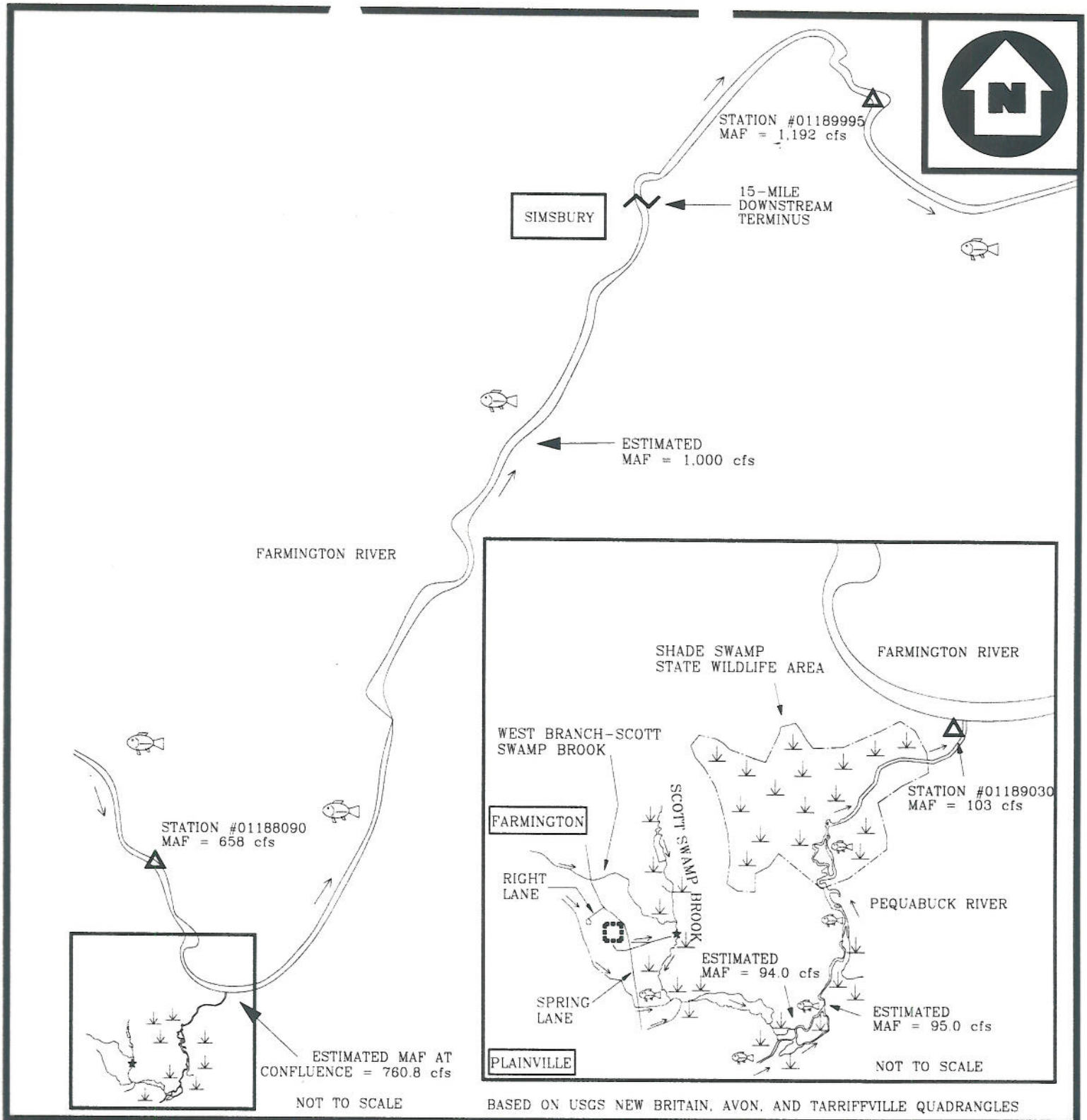
Surface Water Body	Descriptor[a]	Length of Reach (miles)	Flow Characteristics (cfs)[b]	Length of Wetlands (miles)
Scott Swamp Brook	Minimal stream	1.25	$\leq$ 7.2 cfs	0.5
Pequabuck River	Small to moderate stream	1.54	96 cfs	1.2
Pequabuck River	Moderate to large stream	0.78	100 to 103 cfs	1.2
Farmington River	Moderate to large stream	9.23	761 to 1,000 cfs	0.1
Farmington River	Large stream to river	2.28	1,000 to 1,080 cfs	--

[a] Minimal stream. Small to moderate steam. Moderate to large stream. Large stream to river. Very large river. Coastal tidal waters. Shallow ocean zone or Great Lake. Deep ocean zone or Great Lake. Three-mile mixing zone in quiet flowing river.

[b] Flow rates are reported in cubic feet per second and were estimated using available U.S. Geological Survey gaging station information and from observations and field measurements made by WESTON.

-- = No wetlands measured in this length of river.

A number of endangered/threatened species have been identified within four-radial miles of the Edmunds property, but available information does not indicate whether these environments are located along the downstream surface water drainage route from the property [53]. However, the Shade Swamp State Wildlife Area, located along the Pequabuck River approximately 1.5 to 2.3 miles downstream from the Edmunds property, is noted by the CT DEP as containing sensitive environments (Figure 4) [57]. Table 12 summarizes sensitive environments located within 15-downstream miles of the Edmunds property [42; 56; 57].



SURFACE WATER MIGRATION ROUTE

EDMUNDS MANUFACTURING COMPANY
FARMINGTON, CONNECTICUT

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 4

Table 12

Sensitive Environments Located Along the 15-Mile Downstream Pathway from Edmunds Manufacturing Company

Sensitive Environment Name	Sensitive Environment Type	Water Body	Approximate Downstream Distance from PPE	Flow Rate at Environment
Scott Swamp Brook	Protected under Clean Water Act	Scott Swamp Brook	0.0 miles	<4 cfs
Shade Swamp State Wildlife Area	State Wildlife Management Area	Pequabuck River	1.5 miles	96 cfs
Sandplain Gerardia (*Agalinis acuta*)	State-endangered species	Pequabuck River	1.5 miles	96 cfs
New England Grape (*Vitis novae-angliae*)	State species of Special Concern	Pequabuck River	1.5 miles	96 cfs

cfs = Cubic feet per second.
PPE = Probable point of entry.

No drinking water intakes are located within 15-downstream miles of the Edmunds property [22, p. 51]. Scott Swamp Brook (downstream of Hyde Road in Farmington, Connecticut) and the Pequabuck River are considered fisheries, although neither water body is stocked [54; 62, p. 14-15]. The Farmington River is one of Connecticut's premier trout fisheries. It is stocked by the State of Connecticut with trout and Atlantic Salmon at locations upstream and downstream of Farmington. The segment of the Farmington River downstream of the Edmunds property is classified as a warm-water fishery by CT DEP, which is currently attempting to restore the Atlantic Salmon to the river [53]. None of the fisheries downstream of the Edmunds property have been closed [53].

FIP Evaluation

The FIP properties for which WESTON is performing SIPs are a mixture of laboratories, metalworking, and machine shops. Processes which are common within the FIP and vicinity include laboratory work, metal working (cutting, milling, drilling, lathing, and grinding), degreasing, painting, metal plating, and machinery assembly. Various FIP properties being investigated by WESTON have, at one time, used chlorinated solvents in processes at their facilities, primarily for the purpose of metal degreasing prior to finishing. Prior to circa 1980, public sewer service was not available in the FIP; sanitary waste in the FIP was discharged to on-site septic systems, drywells, or some combination of these systems. Wastewaters generated from on-site processes, often containing solvents, chlorinated solvents, or inorganic elements, were often discharged to these same on-site disposal systems. Several properties disposed larger amounts of wastewater or non-contact cooling water directly to Scott Swamp Brook, its tributaries, or drainage systems which lead to Scott Swamp Brook.

After 1980, several FIP properties filed with EPA Region I under the requirements of RCRA as generators of hazardous waste. Under the RCRA program, CT DEP inspected these facilities every few years to verify compliance with hazardous waste disposal regulations. In general, on-site disposal of hazardous wastes ceased throughout the FIP between 1980 and 1983, when public sanitary sewer service was provided to the FIP properties, and wastes were diluted and discharged to this system.

Based on topographic surveys conducted by the Town of Farmington, as well as WESTON field observations, overland flow from the FIP properties travels via storm drains/drainage swales, intermittent/perennial streams, or directly to Scott Swamp Brook. Approximately 0.8 miles downstream of the FIP, Scott Swamp Brook joins the Pequabuck River, which is a fishery (Figure 4). Approximately 1.5 miles downstream of the FIP, the Pequabuck River enters the Shade Swamp Wildlife Management Area, which is an extensive alluvial swamp and habitat for a Federally-endangered species and a State species of special concern.

On July 12, 1995, WESTON collected 2 surface water and 21 sediment samples, including trip blank and equipment blank samples from the vicinity of the FIP to evaluate the surface water pathway. Sampling locations were selected based on the location of each property within the FIP, and to document, when possible, actual contamination from individual properties to the surface water pathway, including target fisheries and sensitive environments. Samples were submitted through the EPA CLP for VOC, SVOC, pesticide/PCB, total metals and cyanide analyses. Table 13 summarizes sediment and surface water samples collected by WESTON on July 12, 1995 from the vicinity of the FIP to evaluate the surface water pathway and Figure 5 depicts WESTON sample locations.

Table 13

Sediment and Surface Water Sample Summary: Farmington Industrial Park Properties, Samples Collected by WESTON on July 12, 1995

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
MATRIX: SEDIMENT				
SD-01	AHF02 MAGL19	0900	Grab (0 to 8 in.)	Sediment sample collected from the Shade Swamp Wildlife Area, 100 yards north of the Scott Swamp Road bridge over the Pequabuck River.
SD-02	AHF03 MAGL20	0925	Grab (0 to 8 in.)	Sediment sample collected to document potential contamination entering the Pequabuck River via an unnamed stream near Pequabuck Crossing.

Table 13

Sediment and Surface Water Sample Summary: Farmington Industrial Park Properties, Samples Collected by WESTON on July 12, 1995 (Continued)

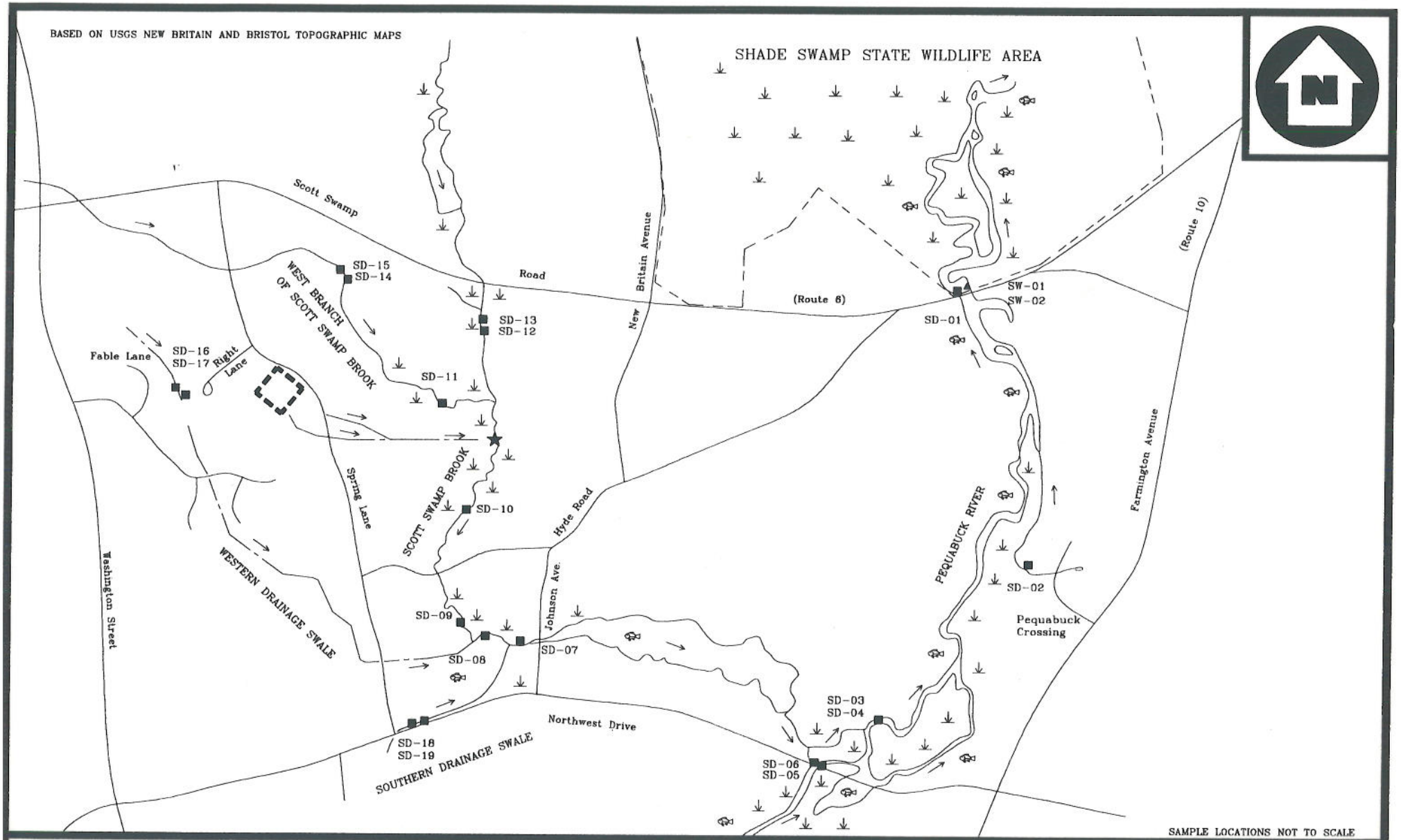
Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
SD-03	AHF04 MAGL21	0915	Grab (0 to 6 in.)	Sediment sample collected from the downstream discharge point from Scott Swamp Brook to the Pequabuck River (MS/MSD).
SD-04	AHF05 MAGL22	0915	Grab (0 to 6 in.)	Duplicate of sample SD-03 collected for quality control.
SD-05	AHF06 MAGL23	1000	Grab (0 to 6 in.)	Sediment sample collected upstream of the confluence of Scott Swamp Brook and the Pequabuck River, immediately downstream of the Northwest Drive bridge over the Pequabuck River.
SD-06	AHF07 MAGL24	1005	Grab (0 to 6 in.)	Sediment sample collected upstream of the confluence of Scott Swamp Brook and the Pequabuck River, immediately downstream of the Northwest Drive bridge over the Pequabuck River.
SD-07	AHF08 MAGL25	1025	Grab (0 to 8 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with the southern drainage swale.
SD-08	AHF09 MAGL26	1115	Grab (0 to 8 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with the western drainage swale.
SD-09	AHF10 MAGL27	1137	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, approximately 450 feet upstream of location SD-08.
SD-10	AHF11 MAGL28	1135	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with the west branch of Scott Swamp Brook, due west of the northern edge of the EBM building.
SD-11	AHF12 MAGL29	1220	Grab (0 to 6 in.)	Sediment sample collected from wetlands along the west branch of Scott Swamp Brook, at the point where overland runoff from the Connecticut Spring and Stamping property enters the brook.
SD-12	AHF13 MAGL30	1300	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with a small tributary, 20 feet south of sample SD-13.

Table 13

Sediment and Surface Water Sample Summary: Farmington Industrial Park Properties, Samples Collected by WESTON on July 12, 1995 (Concluded)

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
SD-13	AHF14 MAGL31	1310	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with a small tributary.
SD-14	AHF15 MAGL32	1420	Grab (0 to 6 in.)	Sediment sample collected from the west branch of Scott Swamp Brook, 50 feet upstream of the point where overland runoff from the New England Aircraft Plant No. 1 property enters the brook.
SD-15	AHF16 MAGL33	1430	Grab (0 to 6 in.)	Sediment sample collected from the west branch of Scott Swamp Brook, 75 feet upstream of the point where overland runoff from the New England Aircraft Plant No. 1 property enters the brook.
SD-16	AHF17 MAGL34	1432	Grab (6 to 8 in.)	Sediment sample collected from the western drainage swale, behind the residence at 8 Fable Lane.
SD-17	AHF18 MAGL35	1440	Grab (6 to 8 in.)	Sediment sample collected from the western drainage swale, behind the residence at 6 Fable Lane.
SD-18	AHF19 MAGL36	1241	Grab (6 to 8 in.)	Sediment sample collected from the southern drainage swale, 125 feet east of the intersection of Spring Lane and Northwest Drive.
SD-19	AHF20 MAGL37	1251	Grab (6 to 8 in.)	Sediment sample collected from the southern drainage swale, 175 feet east of the intersection of Spring Lane and Northwest Drive.
MATRIX: AQUEOUS				
SW-01	AHF30 MAGL47	0850	Grab	Surface water sample collected from the Pequabuck River in the Shade Swamp Wildlife Area, 100 yards north of the Scott Swamp Road bridge.
SW-02	AHF31 MAGL48	0850	Grab	Duplicate of sample SW-01 collected for quality control.
TB-01	AHF34	0850	Grab	Trip blank sample collected for quality control.
RB-01	AHF32 MAGL50	0920	Grab	Rinsate blank sample collected for quality control.

MS/MSD = Matrix Spike/Matrix Spike Duplicate.



LEGEND

- STATE WILDLIFE AREA PROPERTY LINE
- WETLAND
- SEDIMENT SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- PPE TO SURFACE WATER
- MANMADE STREAM/SWALE
- STREAM/RIVER
- FISHERY
- EDMUNDS MANUFACTURING COMPANY

SURFACE WATER AND SEDIMENT SAMPLE LOCATION MAP

EDMUNDS MANUFACTURING COMPANY
FARMINGTON INDUSTRIAL PARK PROPERTIES
FARMINGTON/PLAINVILLE, CONNECTICUT

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 5

During the FIP WESTON environmental sampling event, eleven reference sediment samples were collected to determine background conditions for the area in the vicinity of the FIP. The reference sample locations were selected based on their upstream location from potential targets (Figure 5). Due to the variable concentrations of inorganic elements in natural sediments, reference samples were generally collected in pairs. In addition, WESTON collected eight target sediment samples to evaluate whether releases to surface water have occurred to Scott Swamp Brook or to the Pequabuck River; replicate and duplicate samples, a rinsate blank sample, and a trip blank sample were also collected to evaluate the surface water pathway in the vicinity of the FIP.

The following sediment samples were collected along the surface water pathway to evaluate observed releases and actual contamination targets which may be attributable to properties that are part of the FIP. Sample SD-01 was collected from the Shade Swamp Wildlife Area; SD-03/SD-04 were collected from the downstream discharge point from Scott Swamp Brook to the Pequabuck River; SD-07 was collected from the wetlands along Scott Swamp Brook downstream from its confluence with the FIP southern drainage swale; SD-08 was collected from the wetlands along Scott Swamp Brook downstream of its confluence with the western drainage swale; SD-09 was collected from the wetlands along Scott Swamp Brook, approximately 450 feet upstream of location SD-08; SD-10 was collected from wetlands along Scott Swamp Brook, downstream of its confluence with the West Branch of Scott Swamp Brook; SD-11 was collected from wetlands along the West Branch of Scott Swamp Brook; SD-11 was collected from wetlands along the West Branch of Scott Swamp Brook, at the point where overland runoff from the Connecticut Spring and Stamping property enters the brook.

Sediment Sample No.	Spacial Location	Reference Sample Numbers
SD-01	Shade Swamp Wildlife Area; Pequabuck River	SD-02, SD-05, SD-06, SD-12, SD-13, SD-14, SD-15, SD-16, SD-17, SD-18, SD-19
SD-03/4	Wetlands; Pequabuck River	SD-05, SD-06, SD-12, SD-13, SD-14, SD-15, SD-16, SD-17, SD-18, SD-19
SD-07	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15, SD-16, SD-17, SD-18, SD-19
SD-08	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15, SD-16, SD-17
SD-09	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15
SD-10	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15
SD-11	Wetlands; West Branch of Scott Swamp Brook	SD-14, SD-15

Surface water samples, SW-01 and SW-02, were collected within the Shade Swamp Wildlife Area to document the level of contamination within that sensitive environment. No other surface water samples were collected by WESTON. As previously stated, sediment sample SD-01 was also collected within Scott Swamp Brook, along with complete reference location samples documenting upstream concentrations. If sediment sample SD-01 reported observed release substances at the Shade Swamp Wildlife Area, the surface water samples would be used to determine if those substances exceeded applicable surface water quality benchmark values. Based on this rationale, no upstream reference surface water samples were collected. The following table summarizes sediment samples collected along the West Branch of Scott Swamp Brook, Scott Swamp Brook, and the Pequabuck River to evaluate observed releases and targets within these water bodies, and the corresponding reference samples used to establish reference concentrations upstream of the FIP.

Table 14 is a summary of organic compounds and inorganic elements detected through CLP analyses of WESTON sediment samples collected on July 12, 1995. A complete listing of analytical results is included in Attachment E. For each sample location, a compound or element is listed if it was detected at three times or greater than the appropriate reference sample concentration as described in the previous paragraphs. However, if the compound or element was not detected in the reference sample, the reference SQL (for organic analyses) or SDL (for inorganic analyses) is used as the reference value. These compounds or elements are listed if they occurred at a value equal to or greater than the reference sample's SQL or SDL and are designated by their approximate relative concentration above these values.

Table 14

Summary of Analytical Results, Sediment Sample Analysis for Farmington Industrial Park Properties: Samples Collected by WESTON on July 12, 1995

Sample Location No.	Compound/Element	Concentration	Reference Concentration	Comments
SD-01 AHF02 MAGL19	**INORGANICS**			
	Chromium	159 mg/kg	42.6 mg/kg	3.7 × REF
SD-07 AHF08 MAGL25	**INORGANICS**			
	Selenium	0.84 mg/kg	0.81 U mg/kg	1.04 × SDL
SD-08 AHF09 MAGL26	**VOC**			
	2-Butanone	90 µg/kg	15 U µg/kg	6.0 × SQL
	Toluene	29 µg/kg	15 U µg/kg	1.93 × SQL

Table 14

Summary of Analytical Results, Sediment Sample Analysis for Farmington Industrial Park Properties: Samples Collected by WESTON on July 12, 1995 (Concluded)

Sample Location No.	Compound/Element	Concentration		Reference Concentration		Comments
SD-08 (concluded)	**PESTICIDE/PCB**					
	4,4'-DDD	28	J µg/kg	4.9	UJ µg/kg	5.7 × SQL
	INORGANICS					
	Chromium	611	mg/kg	20.7	mg/kg	29.5 × REF
	Copper	93.4	J mg/kg	7.6	UJ mg/kg	12.3 × SDL
	Selenium	17.9	mg/kg	0.81	U mg/kg	22.1 × SDL
	Zinc	265	mg/kg	26.7	mg/kg	9.9 × REF
SD-09 AHF10 MAGL27	**SVOCS**					
	Di-n-butylphthalate	570	J µg/kg	490	U µg/kg	1.2 × SQL
	Bis(2-ethylhexyl)phthalate	860	J µg/kg	490	U µg/kg	1.8 × SQL
	PESTICIDE/PCB					
	4,4'-DDE	11	J µg/kg	4.9	UJ µg/kg	2.2 × SQL
	4,4'-DDD	43	J µg/kg	4.9	UJ µg/kg	8.8 × SQL
	INORGANICS					
	Arsenic	5.2	mg/kg	2.5	U mg/kg	2.1 × SDL
	Cadmium	1.6	mg/kg	0.32	U mg/kg	5.0 × SDL
	Chromium	195	mg/kg	20.7	mg/kg	9.4 × REF
	Copper	50.6	J mg/kg	7.6	UJ mg/kg	6.7 × SDL
	Lead	74.1	mg/kg	21.6	mg/kg	3.4 × REF
	Mercury	0.17	mg/kg	0.08	U mg/kg	2.1 × SDL
	Selenium	7.7	mg/kg	0.81	U mg/kg	9.5 × SDL
	Zinc	209	mg/kg	26.7	mg/kg	7.8 × REF
SD-11 AHF12 MAGL29	**VOCS**					
	TCE	17	µg/kg	12	U µg/kg	1.4 × SQL
	PCE	65	µg/kg	12	U µg/kg	5.4 × SQL

UJ = The compound was analyzed for; but was not detected. The SQL is an estimated quantity.

Four VOCs, 2-butanone, toluene, TCE and PCE, were detected between 1.4 and 6.0 times the SQL in sediment samples collected from wetlands along Scott Swamp Brook and the West Branch of Scott Swamp Brook. The detection of TCE and PCE in sediment sample SD-11 is consistent with past use of chlorinated solvents at the properties in the FIP and with substances detected in groundwater samples collected from public drinking water wells in the area. No other VOCs were detected in sediment samples collected by WESTON.

Two SVOCs, di-n-butylphthalate and bis(2-ethylhexyl)phthalate were detected in sediment sample SD-09 at 1.2 and 1.8 times the SQL, respectively. SD-09 was collected from the wetlands along Scott Swamp Brook, approximately 450 feet upstream of location SD-08. The concentrations associated with the SVOCs detected in sample SD-09 were estimated. WESTON has included the detected concentrations of these SVOCs to remain consistent with technical directives provided by EPA Region I. Two pesticides were also detected in WESTON sediment samples; however, based on operational records provided by the properties that WESTON is conducting SIP investigations and prior analytical results of samples collected from FIP properties under WESTON SIP investigations; these pesticides will not be considered attributable to the Edmunds property for the purposes of this SIP. Further, pesticides are ubiquitous in the environment and are used for routine pest and foliage control.

Eight inorganic elements were detected in WESTON sediment samples ranging between 1.04 times the SDL (selenium) and 29.5 times the reference concentration (chromium). Values associated with the inorganic element copper at sample locations SD-08 and SD-09 were estimated. WESTON has included the detected concentrations of this inorganic element to remain consistent with technical directives provided by EPA Region I. No other substances were detected in WESTON sediment samples.

Surface water samples were collected within the Shade Swamp Wildlife Area to document the level of contamination within that sensitive environment. No other surface water samples were collected by WESTON. Sediment samples were also collected with complete reference location samples, documenting upstream concentrations. If sediment sample SD-01 reported observed release substances at the Shade Swamp Wildlife Area, surface water samples would be used to determine if those substances exceeded applicable surface water quality benchmark values. Based on this rationale, no upstream reference surface water samples were collected. Surface water sample results were compared with the Ambient Water Quality Criteria (AWQC) and the Ambient Aquatic Life Advisory Concentration (AALAC) benchmarks.

Table 15 is a summary of organic compounds and inorganic elements detected through CLP analyses of WESTON surface water samples.

Table 15

Summary of Analytical Results, Surface Water Sample Analysis for Farmington Industrial Park Properties: Samples Collected by WESTON on July 12, 1995

Sample Location No.	Compound/Element	Concentration (µg/L)	Benchmark Concentration (µg/L)	Comments
SW-01 AHF30 MAGL47	**INORGANICS**			
	Aluminum	472 J	--	NA
	Barium	39.1 J	--	NA
	Calcium	10,700 J	--	NA
	Iron	1,180 J	1,000	1.18 x BM
	Lead	10.1 J	3.2	3.16 x BM
	Magnesium	1,970 J	--	NA
	Manganese	134 J	--	NA
	Nickel	6.4 J	160	Below BM
	Potassium	3,330 J	--	NA
	Sodium	16,000 J	--	
SW-02 AHF31 MAGL48	**INORGANICS**			
	Aluminum	442 J	--	NA
	Barium	39.1 J	--	NA
	Calcium	10,800 J	--	NA
	Iron	1,120 J	1,000	1.12 x BM
	Lead	10.1 J	3.2	3.16 x BM
	Magnesium	2,000 J	--	NA
	Manganese	133 J	--	NA
	Nickel	8.3 J	160	Below BM
	Potassium	3,260 J	--	NA
	Sodium	16,000 J	--	NA

-- = No AWQC/AALAC Benchmark is provided for this contaminant.
BM = AWQC and AALAC Benchmark used as the ecological-based standard.

There were no elevated levels of VOCs, SVOCs, pesticides, or PCBs detected in surface water samples collected by WESTON on July 12, 1995. However, both SW-01 and SW-02 revealed elevated concentrations of ten inorganic elements. Of the ten inorganic elements detected, only two, iron and lead, exceeded environmental benchmarks. None of the inorganic elements detected

in surface water samples SW-01 and SW-02 were detected in sediment sample SD-01. The complete analytical results of the WESTON sampling are included in Attachment B.

SOIL EXPOSURE PATHWAY

There are no on-site residents at the Edmunds property; however, 110 full-time workers are employed at the Edmunds manufacturing building [3, p. 1]. Residences to the south and west of the property are not susceptible to surficial migration of contamination from the property, with the exception of properties adjacent to the drainage swale which receives overland runoff from the Edmunds property (Figure 2) [3, p. 1].

Two source soil samples (SS-04 and SS-04D) were collected by NUS/FIT on August 8, 1989 at depths of 2 feet or less and may be used to characterize surficial soil contamination on the Edmunds property [1, Table 3]. No VOCs were detected in any of the soil samples collected by NUS/FIT on the Edmunds property; however, nine inorganic elements were detected above reference values in soil samples SS-04 and SS-04D. In addition, three VOCs (acetone, methanol, and MEK) and seven inorganic elements (cadmium, chromium, lead, arsenic, barium, silver, and mercury) were detected in a soil sample collected by the CT DEP in the same location as the NUS/FIT soil samples SS-04 and SS-04D on August 8, 1989. The area of soil contamination on the Edmunds property is approximately 500 sq ft. The complete analytical results of the CT DEP sampling are included in Attachment E.

The nearest residence to the property is located approximately 300 feet south of the property at 37 Wells Drive (Figure 2) [4]. Approximately 2,633 people live within one radial mile of the Edmunds property [15]. No terrestrial sensitive environments are located on the Edmunds property [3, pp. 5-7]. There are no schools or day-care centers within 200 feet of the on-site source areas [63, p. 10].

AIR PATHWAY

The nearest individuals to the Edmunds property are the 110 full time workers [3, p. 1]. The nearest residence to the property is located on Lot No. 56, approximately 300 feet south of the property, at 37 Wells Drive (Figure 2) [3, p. 10; 4]. The nearest school is the Wheeler Elementary School, which has an enrollment of an estimated 376 students. The Wheeler Elementary School is located approximately 1.5 miles south of the Edmunds property [3]. An estimated 88,389 people live within a four-mile radius to the Edmunds property [15]. No sensitive environments are located on the property. Table 16 summarizes the residential population located within four radial miles of the Edmunds property [15].

Table 16

Estimated Population within Four Miles of Edmunds Manufacturing Company

Radial Distance from Edmunds Manufacturing Company (miles)	Estimated Population
0.00 < 0.25	164
0.25 < 0.50	497
0.50 < 1.00	1,972
1.00 < 2.00	16,020
2.00 < 3.00	29,781
3.00 < 4.00	39,955
TOTAL	**88,389**

The nearest off-site wetland is located approximately 0.5 to 1.0 miles southeast of the property along the Scott Swamp Brook and occupies approximately 0.37 acres. There are no wetlands located within 0.25 radial miles of the property. The approximate total wetland acreage within four-radial miles of the property is 1,990 acres [62]. Several sensitive environments are located within four-radial miles of the property. Table 17 summarizes the sensitive environments located within four miles of the Edmunds property [56; 57; 62]. Sensitive environments listed on Table 17 which are available to the surface water pathway have also been discussed in that section of this report.

Table 17

Sensitive Environments Located within Four Miles of Edmunds Manufacturing Company

Radial Distance from Edmunds Property (miles)	Sensitive Environment/Species (status)
0.00 < 0.25	0 acres of wetlands
0.25 < 0.50	0 acres of wetlands
0.50 < 1.00	0.37 acres of wetlands
	Agalinis acuta (Federal and State Endangered)
1.00 < 2.00	1,295 acres of wetlands
	Vitis novae-angliae (State Special Concern)
	Lygodium palmatum (State Special Concern)
	Alluvial Swamp (Unique Biotic Community)

Table 17

Sensitive Environments Located within Four Miles of Edmunds Manufacturing Company (Concluded)

Radial Distance from Edmunds Property (miles)	Sensitive Environment/Species (status)
2.00 < 3.00	322 acres of wetlands
	Apectrum hyemale (State Special Concern)
	Hydrophyllum virginianum (State Special Concern)
	Dicentra canadensis (State Threatened)
	Dryopteris goldiana (State Threatened)
3.00 < 4.00	373 acres of wetlands
	Hydrastis canadensis (State Endangered)
	Dicentra canadensis (State Threatened)
	Platanthera Dilatata (State Special Concern)

No known prior air sampling has been performed at the Edmunds property. WESTON conducted air monitoring on April 13, 1995 during on-site reconnaissance, utilizing a photoionization detector (PID) no readings above background were detected [3, p. 2].

SUMMARY

The Edmunds Manufacturing Company (Edmunds) property is located at 45 Spring Lane, Farmington, Hartford County, Connecticut. According to Farmington Town Assessor's maps 76 and 77, Edmunds is located at Lot No. 23 Map 77. The property has been occupied by Edmunds since 1965 and is currently owned by Mr. Robert Edmunds. Edmunds is an active manufacturing company currently manufacturing gauges for commercial and industrial uses. The Edmunds property is approximately 4 acres and consists of a single one-story 43,800-square foot (sq ft) manufacturing building. The surrounding area is zoned for both mixed industrial and residential use.

The property is abutted to the north by Mallory Industries, to the east by Connecticut Spring and Stamping Company, to the west by Dell Manufacturing Company, and to the south by New England Aircraft Plant No. 2 and residential properties.

Prior to development in 1965, the Edmunds property and surrounding properties were used for agricultural purposes. Edmunds has been owned and operated by Mr. Edmunds at this location since 1965. Edmunds has been and is currently a manufacturer of commercial and industrial gauges. Processes used at the manufacturing building include but are not limited to; general metal machining (drilling, turning, grinding, lapping, milling, and lathe work), plating, painting,

and parts degreasing. Processes at Edmunds have remained relatively unchanged; however, chemicals used and wastes generated at the property may have varied throughout Edmunds operational history due to industry technological advances.

From 1965 until 1980, Edmunds discharged untreated rinse water from bright dipping, nickel plating, and black oxide finishing processes to on-site drywells. Non-contact coolant waters from the vapor degreasers, air conditioner, and air compressor were discharged to a man-made surface drainage system which emptied into Scott Swamp Brook. No sampling of the rinse water is documented.

A 1970 Connecticut Department of Environmental Protection (CT DEP) inspection reported that the grinding and lapping process generated soluble oil waste and that plating process generated acid waste. The inspector reported that the black oxide and detergent wastes were being discharged to a septic tank and leachfield. There is no record of samples collected by the Connecticut Department of Environmental Protection (CT DEP) in 1970 on the Edmunds property.

In 1974, the CT DEP updated the previous inspection and reported that unspecified wastes were, at that time, removed by Patrick's Waste Oil of Hartford, Connecticut. CT DEP records indicated that Patrick's Waste Oil was included on the CT DEP's list of approved hazardous waste haulers. The 1974 CT DEP report stated that prior to April 1974, sanitary waste was discharged to a septic tank and leachfield on the west side of the Edmunds property. In April 1974, Edmunds was connected to the municipal sanitary sewer system.

A 1980 CT DEP inspection report stated that water soluble cutting oils from machining processes at Edmunds were being picked up by Patrick's Waste Oil; however, untreated rinse waste from the bright dipping, nickel plating, and black oxide finishing processes were being discharged to the on-site drywells. Acid wastes were reportedly removed by Environmental Waste Removal, Inc. Non-contact coolant waters from the degreasers, air compressor, and air conditioning were discharged to a drainage swale, which discharged to the Scott Swamp Brook. Trichloroethylene (TCE) was reportedly used as a degreasing solvent and wastes containing TCE were removed from the Edmunds property by Hubbard Hall, Inc., a CT DEP approved hazardous waste hauler.

In 1980, the CT DEP ordered Edmunds to eliminate the untreated wastewater discharge to the on-site drywells and groundwater. In response to the CT DEP order, Edmunds installed a 4,000-gallon fiberglass underground storage tank (UST) for chromium plating rinse wastewater and hired a permitted waste hauler to periodically empty the tank. According to CT DEP Hazardous Waste Management files, the drywells located at the Edmunds property were excavated during the summer of 1980. In September 1980, Edmunds was permitted to discharge black oxide finishing rinses to the municipal sanitary sewer system and discharge non-contact coolant water to the Scott Swamp Brook under the National Pollution Discharge Elimination System (NPDES) Permit No. CT0023535. Nickel plating operations were reportedly eliminated at the Edmunds manufacturing building in 1980.

In 1985, a CT DEP Resource Conservation and Recovery Act (RCRA) inspector reported that Edmunds was operating as a non-notifying generator and was observed using a false Environmental Protection Agency (EPA) identification number. On March 4, 1985, Edmunds notified the EPA as a large quantity generator (EPA ID No. CT0054187455).

In 1987, CT DEP records stated that Edmunds reportedly generated 14,175-gallons of chromium rinse wastewater and 165-gallons of TCE and oil waste. Wastes were removed off-site by Hubbard Hall, Inc.

In December 1988, NUS Corporation Field Investigation Team (NUS/FIT) completed a Preliminary Assessment (PA) of the Edmunds property which reported that disposal practices prior to 1980 were of concern and recommended that a Screening Site Inspection (SSI) be conducted. At the time of the PA, Edmunds was contracting with CECOS, a permitted waste hauler, for waste disposal.

On February 6, 1989, a CT DEP Water Compliance Unit inspection report noted that analytical results of Edmunds discharge to the municipal sewer system identified TCE and 1,1,1-TCE (sic). The CT DEP detection of 1,1,1-TCE (sic) refers to 1,1,1-trichloroethane (1,1,1-TCA). The CT DEP inspection report also stated that drummed chemicals such as naphtha, oils, paint thinner, mineral spirits, and kerosene were being stored outside on the ground.

In July 1990, NUS/FIT completed an SSI of the Edmunds property. During the NUS/FIT on-site reconnaissance, NUS/FIT noted that water-soluble oil waste was being stored in a 3,000-gallon UST prior to removal from the property, and waste TCE was drummed for reclamation by the supplier. NUS/FIT also observed an area of stained soils adjacent to a corroded section of the west wall of the building. Following the on-site reconnaissance, NUS/FIT personnel collected seven soil samples from the Edmunds property to characterize on-site sources and to evaluate the possibility of releases to the environment from the sources. Samples were analyzed for volatile organic compounds (VOCs). No VOCs were detected in any of the samples collected by NUS/FIT. Inorganic elements were detected in five soil samples collected from the property. During the SSI, Edmunds retained Leggette, Brasheears & Graham, Inc. (LBG), an environmental consulting firm who was present during the SSI sampling event. In September 1990, based on the NUS/FIT SSI sampling analytical data, LBG recommended that Edmunds remove the drywells, the waste oil tank, and, if necessary, excavate and dispose of contaminated soils associated with the two source areas.

In October 1990, Edmunds retained Loureiro Engineers Associates, P.C. (LEA) to remove the on-site septic tank and associated drywells, the 4,000-gallon chromium rinse water UST, and the 3,000-gallon waste oil UST, as well as sample the soils surrounding these structures and remove associated contaminated soils. With the exception of methyl ethyl ketone (MEK), which was detected in soils at concentrations between 71 and 100 parts per billion (ppb), no other VOCs were detected in LEA soil samples during removal activities.

On April 13, 1995, Roy F. Weston, Inc. (WESTON®) conducted an on-site reconnaissance at the Edmunds property. Records of hazardous waste generation and shipping for 1994 and part of 1995, were reviewed by WESTON personnel. On July 12, 1995 WESTON collected environmental samples of groundwater, sediment, and surface water at locations upgradient and downgradient of the Edmunds property.

According to State file information, the Connecticut Department of Health Services (CT DHS) initially collected and analyzed samples from the four FIP Wells and Johnson Avenue Well No. 3 in June 1975. Available records indicate that the Johnson Avenue Well No. 6 was first sampled in June 1982.

Analytical results from the June 1975 sampling round of the four FIP Wells and Johnson Avenue Well No. 3 indicated the presence of several VOCs at concentrations ranging from 20 to 1,000 ppb. The compounds present at the highest concentrations from the June 1975 sampling round included 1,1,1-TCA at 1,000 ppb, chloroform at 680 ppb, tetrachloroethylene (PCE) at 640 ppb, and TCE at 430 ppb. The highest concentrations of TCA, TCE, and chloroform were noted in samples collected from Johnson Avenue Well No. 3, and the highest concentration of PCE was detected in the sample collected from FIP Well No. 4.

Samples have been collected from the six affected wells intermittently from 1975 to the present, with the exception of Johnson Avenue Well No. 6, for which no analytical results are available prior to 1982. The concentration of chlorinated organics in the wells has generally decreased since their discovery in 1975, but were still present as of the latest sampling round conducted in the Spring of 1995.

Comparisons can be drawn between historical drinking water analytical results and the more recent analytical results to determine trends of contamination. The following is a description of certain contaminants detected in the Farmington Industrial Park (FIP) and Johnson Avenue Wells.

- Chloroform - Based on the analytical results, it appears that the presence of chloroform in the FIP and Johnson Avenue Wells may have been an isolated incident. Chloroform does not appear to be a continuing source of contamination in the FIP and Johnson Avenue Wells. Based on operational records provided by Edmunds and prior analytical data from soil and sediment source samples collected by NUS/FIT, chloroform is not considered attributable to Edmunds for the purposes of this Site Inspection Prioritization (SIP).

- 1,1,1-Trichloroethane (1,1,1-TCA) - The concentrations of 1,1,1-TCA in the wells have illustrated steady declines over time, with the exception of FIP Well No. 3, which displayed a slightly elevated concentration. 1,1,1-TCA may be considered attributable to Edmunds, since it was recorded that CT DEP Water Compliance Unit analytical data, dated February 6, 1989, had identified 1,1,1-TCE (sic) as one of the substances that Edmunds was discharging into the municipal sewer system. 1,1,1-TCA may degrade in soils and groundwater to 1,1-DCE, 1,1-DCA, 1,2-DCE, chloroethane, vinyl chloride, and acetic acid. The degradation of 1,1,1-TCA to 1,1-DCE and 1,2-DCE may explain the reported concentration of these substances in several FIP drinking water wells which were sampled.

- Trichloroethylene (TCE) - The concentrations of TCE in the FIP and Johnson Avenue Wells have consistently declined over time. All concentrations, originally significantly above the Maximum Contaminant Level (MCL), have diminished to below the MCL, with the exception of Johnson Avenue Well No. 6, which is still greater than two times the MCL. Records provided by Edmunds, and CT DEP Water Compliance Unit analytical results of Edmunds discharge to the municipal sewer system indicate that TCE was used at Edmunds and may be attributed to the processes at the manufacturing building. TCE may degrade in soils and groundwater to 1,2-DCE and vinyl chloride.

- Tetrachloroethylene (PCE) - In general, PCE concentrations have steadily declined over time in the FIP and Johnson Avenue Wells; however, two of the drinking water wells, FIP Well No. 2 and Johnson Avenue Well No. 3, still contain concentrations above the MCL. Based on operational records provided by Edmunds and the soil and sediment source samples collected by NUS/FIT, PCE will not be considered attributable to Edmunds. PCE may degrade in soils and groundwater to TCE, 1,2-DCE, and vinyl chloride.

No drinking water intakes are located within 15-downstream miles of the Edmunds property. Scott Swamp Brook (downstream of Hyde Road in Farmington, Connecticut) and the Pequabuck River are considered fisheries, although neither water body is stocked. The Farmington River is one of Connecticut's premier trout fisheries. It is stocked by the State of Connecticut with trout and Atlantic Salmon at locations upstream and downstream of Farmington. The segment of the Farmington River downstream of the Edmunds property is classified as a warm-water fishery by CT DEP, which is currently attempting to restore the Atlantic Salmon to the river [53]. None of the fisheries downstream of the Edmunds property have been closed.

The nearest individuals to the Edmunds property are the 110 full time workers [3, p. 1]. The nearest residence to the property is located on Lot No. 56, approximately 300 feet south of the property, at 37 Wells Drive (Figure 2) [3, p. 10; 4]. The nearest school is the Wheeler Elementary School, which has an enrollment of an estimated 376 students. The Wheeler Elementary School is located approximately 1.5 miles south of the Edmunds property [3]. An estimated 88,389 people live within a four-mile radius to the Edmunds property [15]. No sensitive environments are located on the property.

REFERENCES
EDMUNDS MANUFACTURING COMPANY

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[2] Schmidl, Joseph (WESTON). 1995. Project Note: Latitude/Longitude Calculations, Edmunds Manufacturing Company, TDD No. 9409-02-CWX.

[3] WESTON. 1995. Field Logbook for Edmunds Manufacturing Company, TDD No. 9409-02-CWX.

[4] Town of Farmington, Connecticut. 1979. Assessor's Map No. 76 and 77.

[5] MA DEP (Massachusetts Department of Environmental Protection), Uniform Hazardous Waste Manifest for various shipments of hazardous waste from Edmunds Manufacturing Company.

[6] CT DEP (Connecticut Department of Environmental Protection), Uniform Hazardous Waste Manifest; State Manifest Document Number: CT F0202558 for Edmunds Manufacturing Company.

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ATTACHMENT A

EDMUNDS MANUFACTURING COMPANY
SOIL SAMPLE ANALYTICAL RESULTS
NUS/FIT

Samples collected August 8, 1989

ATTACHMENT B

EDMUNDS MANUFACTURING COMPANY
GROUNDWATER, SEDIMENT, AND SURFACE WATER SAMPLE ANALYTICAL RESULTS
ROY F. WESTON, INC.

Samples collected July 12, 1995

ATTACHMENT C

EDMUNDS MANUFACTURING COMPANY
FIP AND JOHNSON AVENUE WELLS DRINKING WATER SAMPLE ANALYTICAL RESULTS
CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

Samples collected from 1975 to 1989

ATTACHMENT D

EDMUNDS MANUFACTURING COMPANY
FIP AND JOHNSON AVENUE WELLS DRINKING WATER SAMPLE
ANALYTICAL RESULTS
UNIONVILLE AND PLAINVILLE WATER COMPANIES

Samples collected January 21, 1994 and January 26, 1995

ATTACHMENT E

EDMUNDS MANUFACTURING COMPANY
CT DEP SOIL ANALYTICAL RESULTS
CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

Samples collected August 8, 1989